Institutional determinants of economic efficiency

in

private equity financing

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Abstract

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Private equity (henceforce PE)is less regulated than its bank peers. Paralleling financial liberalisation in recent decades, the PE-market was booming in transaction size with ever-evolving financing strategies. As PE becomes a favourable funding source of start-ups and stressed businesses, anecdotal evidence suggests that PEs are trapped in failure deals just as much as they breed technology/business giants. The development of PE has drawn attention to the synchronising of existing shareholder rights and creditor rights with this new financing agent. The literature in finance and law has paid little attention to the PE market. Hence, this study aims to examine the relationship between regulation and the efficiency of PE-backed financing. The study also investigates the broader scope institutional environment where informal institutions are expected to shape deal efficiency on top of the legal bonding.

To explore the research objectives, this study employs the financing cost of PE-backed enterprises as a measure of efficiency. Using two-stage least squares regression, I investigate the impact of the institutional environment on the financing cost of PE-backed transactions between 1970 and 2016. The results suggest that PE-backed deals cost less when shareholder rights and creditor rights are solid. I also find that the impact of informal institutions is two fold contingent on financing strategies.

Keywords: financing cost; shareholder rights; creditor rights; formal institution; informal institution

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CHAPTER ONE

Introduction

Private equity (PE) traces its roots back to the mid-1930s in the US and Europe. In recent decades, the industry has grown both in size and geographical reach. As of 2017, PE has been gaining traction with nearly $1.3 trillion under management (McKinsey, 2018). As PE firms compete with banks through venture capital funds or structured debts, high-risk businesses seeking access to capital have greatly benefited from the competition in the underwriting business provided by securities operations (Garten, 2001). In these cases, small and medium enterprises (SMEs) resort to venture capital for financing whereas distressed enterprises become target clients of leveraged buyout (LBO) funds (Gompers and Lerner 1999; Kaplan and Stromberg, 2001; Sahlman, 1990). Dramatic success stories of PE-backed deals include Apple Computers, Intel Corporation, Microsoft, and Google. As recorded in Zephyr, the maximum price level for a successfully exited IPO deal is 1,153.07 times earnings before interest, tax, depreciation, and amortisation (EBITDA), or 16,649.02 times net profit[1]. The wealth effect of PE financing has attracted great interest from both investors and researchers.

The literature reveals that the business performance of PE-backed enterprises is significant in difference measures (Baeyens and Manigart, 2006; Beuselinck et al., 2007, 2008; Cumming 2005, 2008; Cumming et al., 2007, 2016; Cumming and Dai, 2011; Heughebaert and Manigart, 2012; Kaplan and Schoar, 2005; Kaplan and Stromberg, 2003). However, anecdotal evidence shows that a PE transaction can be a zero-sum game or negative-sum

[1] Calculated from available records among 647 worldwide successful IPO transactions by mid-2015.

game from an optimal society view. Those who find value in the net asset value (NAV) of PE funds or the equity return alone, also find that the return is paid at the cost of the investee or public market (e.g., the behaviour of taking advantage of tax breaks but not creating any operational value, or taking advantage of the market timing to generate profit at the expense of public markets) (Kaplan and Stromberg, 2009). In some extreme cases, a successful exit route for a PE investment can be detrimental to the public market (Toms et al., 2015). In some case studies, scholars found buyouts led to large-scale layoffs and service disruptions (Davis et al. 2011; Rasmussen, 2008). There is not yet a judging rule agreed by all parties to assess the economic efficiency of PE-backed financing from an optimal society view.

1.1. Financing through PE

Growth opportunities for entrepreneurs often depend heavily on the ability to raise capital. SMEs that have a limited or non-existent credit history or tangible collateral confront many difficulties for a variety of financing resources (Manigart et al., 2002). Similarly, mature companies can undergo depression or distress while waiting for financing to restructure or revive. Corporates that have difficulty in passing screening by mainstream financing intermediaries, such as banks, resort to alternative financing agencies such as PEs.

As the market evolved through competition and innovation, PE emerged, with another financing agent, to serve high-risk enterprises or projects that have limited access to social capital. PEs are new financing agents financed through a combination of equity from PE investors (or PE fund unitholders) and debt from a number of creditors. The PE company or fund is generally constructed as a dual-class agent; one is between the PE investor (limited partners or PE fund unitholder), the other is between the PE manager and target firms. Corresponding to the high-risk business nature, the principal-agency relationship is also

complicated in PE financing. Figure 1.1 presents the dual-class agent relationship in PE financing.

[Image removed for Copyright compliance]

Figure 1.1 A Dual-Class Agent Relationship in PE Financing

Source: Courtois (2013).
Note: PE funds are typically carried through a limited partnership structure in which the PE firm, generally organised as a partnership or limited liability corporation, with a small group of investment professionals and employees, serves as the general partner (GP). The limited partners (LP) consist largely of institutional investors and wealthy individuals who provide the bulk of the capital. The enterprises may employ a private equity company to work as GP and solicit other LPs through a private placement memorandum that describes the business plan, risks, and many other details of the investment (Lerner, 1997). The GP has management control over the fund and is liable for all debts; LPs have limited liability; they do not risk more than the amount of their investment in the fund.

Dual class agent financing, which is notable for its contingencies, strikes a balance between PEs and fund-searching enterprises. Such contingencies are negotiable between the general partners (henceforth, GPs) or PE managers and investee's management team to balance the risk and return of fund providers (Gompers and Lerner, 1999; Kaplan and Stromberg, 2001, 2003; Sahlman, 1990) especially those that are risk-averse (such as pension funds). The contingencies in venture capital (VC) financing contracts separately allocate each stick[2] of shareholder rights to GPs and the limited partners (henceforth, LPs) with various risk-return

[2] By analogy, the property rights can be separated, reassembled and possessed by more than one owner, each holding a set of "sticks". Each stick represents an individual right (Klein and Robinson, 2011).

preferences. This makes a high-risk financing deal more marketable at the funding stage than it otherwise would be. Similarly, LBOs also raise funds using securities with contingency provisions. Based on CapitalIQ records, most LBO deals offer convertible debts, preferred dividends, and even credit default swaps, to their fund providers. These contingencies broaden the scope of the accredited social capital of various risk-return preferences thus facilitating the fund-raising.

1.2. The Economy of PE Financing

Given the complexity of the business model in private equity financing, various valuation techniques assess the outcome of PE-backed financing deals. Most such models focus on PE fund returns. In venture capital deals, valuation models such as discounted cash flow (DCF) are applied in which the discount rate may be subject to open market parameters such as beta (Fisher, 1930; Sharpe, 1964). In LBOs, where structured debt (e.g., collateralised loan obligations; collateralised debt obligations) or equity-like instruments are applied, the valuation model can be complicated given the embedded contingent provisions such as warrants or options as well as special covenants (Kolb, 2010).

A number of PE studies have a social-economic view investigating the relationship between the presence of PEs and PE-backed companies' financial outcomes, employment, and innovation. In a recent comprehensive study covering over 4,000 firms in Asia, Europe and the US (Bloom et al., 2015), PE-backed firms, on average, are the best-managed ownership group in the sample. Empirical studies have shown that the financial and operational performance of PE-backed enterprises is improved when measured in nominal dollar accounting profit terms (Bernstein et al., 2016; Harris et al., 2014; Kaplan and Schoar, 2005).

1.3. Institutional Environment

Though there is a natural tendency to focus on the earnings approach to determine investment performance, I argue that neither the PE fund-level performance nor PE-backed enterprises' performance is an ideal indicator of economic efficiency. The mathematisation of the financing deal performance is inevitable in denotation logic that relies on a series of assumptions such as the rational economic man (REM) and efficient market hypothesis (EMH). As a result, the indicators are inevitably logically limited, though pure mathematical abstraction is always true. The denotative definition of parameters does not secure the meaning of the complete enumeration of the financial world neither is it capable of explaining participants' behaviour. As commented by Fabozzi et al. (2014), (mainstream) finance theories and approaches are subject to artefacts that are context-specific and depend on social or political objectives.

This study is motivated by the speculative nature of financing institutions as well as entrepreneurs. Evidence in the US market shows that when a certain business type is prohibited by regulations, financial institutions tend to innovate their way around the regulatory barriers to speculate in investment opportunities (in their words, "improve market shares") (Kolb, 2010). Financial innovation is especially active when the institutional environment favours innovative financing activities.

In a country such as the US, regulators and judges tend to tolerate creative reading of regulatory statutes without intervening in market innovation such as hybrid investment vehicles applied by PE investments (Garten, 2001; Kaplan and Stromberg, 2003). Conversely, in a bank-dominated nation like Germany, the growth of equity financing or even hybrid financing is actively discouraged by a burdensome regulatory environment. Evidence shows

that the regulatory burden shapes PE investment strategies (Courtois, 2009). For example, many equity-like instruments at the acquisition vehicle level locate mainly in favourable jurisdictions such as Luxembourg, the Channel Islands, the Cayman Islands, or the British Virgin Islands. In specific circumstance, PEs inevitably apply creative legal interpretations to refashion themselves into hybrid institutions that can no longer be categorised as 'commercial bankers' (deposit-lenders) or 'merchant/investment bankers' (underwriter-dealers). The former are deposit-taking businesses that would be subject to government banking regulations. The latter are securities underwriting and dealing businesses that would be subject to the disclosure-based regulatory scheme (Kolb, 2010). A favourable regulatory system for hybrid investment vehicles (such as trusts, limited liability companies (LLC), collateralised loan obligation (CLO), collateralised debt obligation (CDO), that are applied in PE financing) is critical to reduce the barriers or costs thus encouraging the supply of available funds as well as encouraging securities distribution. In previous studies, funding resources such as pension funds as a proportion of GDP have been taken into account to explain the performance of PE investments (Axelson et al., 2013; Cumming and Johan, 2007; Kortum and Lerner, 2001; Poterba, 1989).

So far, the institution literature has primarily concentrated on the development of traditional equity/credit markets, even though the PE market is an important segment of the capital market. In summary, innovative financing instruments are widely used in the PE market. The laws or regulations, as well as a broad sense of institutional factors such as social value or ideology that shape the enforcement and interpretation of above laws or regulations, are expected to play a key role in explaining the efficiency of PE financing. Table 1.1 summarises the key papers in the literature on PE financing and related topics, such as the performance of PE funds, PE-backed financing deals and correlation with institutional factors.

Table 1.1 A Summary of the Literature on the Performance of PE Funds, PE-Backed Financing Deals and the Correlations with Institutional Factors

Author (s)	Sample	Data Source	Dependent Variables	Key Independent Variables	Main findings
Barry et al. (1990)	433 VC-backed IPOs between 1978-1987	Venture Capital Journal, IPO prospectuses	IPO under-pricing	Pre- and post-IPO equity holding of VC, lead VC's selling intensity at IPO, number of month lead venture capitalist served on the board, percent of life that VC served on the board, percent equity holding VC holds after IPO, long holding the period dummy	Quality of VC monitoring service is recognised by the capital market through lower IPO under-pricing
Kaplan and Stein (1993)	124 large buyouts completed between 1980-1989	Securities Data Corporations, merger database	Number of buyouts, net cash flow to capital, net cash flow to capital to E/P (%), EBITDA to capital, EBITDA to capital to E/P (%), market E/P ratio	Lags of the dependent variable	There was a large number of the changes of buyouts in the late 1980s relative to earlier. Such changes include: price to cash flow rise, high price, aggressive investment in riskier industry, and higher leverage
Gompers and Lerner (1999)	Fundraising of independent VCs from 1972-1994	Venture Economics	Natural logarithm of commitments	Value of all VC-backed IPOs in previous year, GDP growth, T-bill return, ERISA prudent man rule dummy, capital gain tax rate	Regulatory changes affect pension funds. capital gains tax rates, overall economic growth and fund raising
Manigart et al. (2002)	over 200 venture capital companies (VCCs) located in five countries (US, UK, France, Belgium, and the Netherlands)	Mail survey from senior managers of VCCs	IRR in an early stage, in the expansion, in acquisition/buyout	Stage diversification, independent VCC, percentage lead investments, number of investments, the expected investment time horizon for early stage, expansion and acquisition/buyout, age, number of offices, number of hierarchical layers, the percentage of small-size investment, the percentage of early-stage investment	Acquisition/buyout specialists require a significantly lower return than other VCCs. High stage-diversified VCCs require a significantly higher return. Independent VCCs require a higher return
Cumming (2005)	12363 Canadian and US VC financing of Canadian firms from 1991 to 2003	Macdonald and Associates	Security's type of debt, convertible, preferred equity	Firm characteristics of the buyout, start-up, expansion, high-tech, deal characteristics of deal size, round number, VC characteristics of partnership, corporate VC governance, VC institutional and market features of capital gains tax, the trend (learning variable) TSX index	Security design is a response to expected agency problems. Capital gain taxation affects contracts. Market conditions affect contracts. The use of different contracts
Kaplan and Schoar (2005)	VC funds with observable returns from 1980-2001	Venture Economics	IRR, PME, TVPI	fund size, sequence, GP's experience, public market return, vintage year	Average fund returns net of fees are roughly equal to those of the S&P 500. Performance increases with fund size and GP experience (track record of past

Author (s)	Sample	Data Source	Dependent Variables	Key Independent Variables	Main findings
					performance). Funds and partnerships in boom times are less likely to increase follow-on funds
Baeyens and Manigart (2006)	136 Belgian VC-backed companies over a five-year period after the initial VC investment	Belgian Venture Capital Association, websites of VC investors, press clippings and press releases	Incremental finance events of internal equity, financial debts, operational debt, external equity	Information asymmetries associated with agency problems: PP&E, intangible assets, the age of VC-backed company, proxy of financial risk such as Altman's Z score	The asymmetric information and agency costs are high; equity finance becomes particularly important. VC-backed companies raising financial debt have considerably more collateral as compared to those resorting to other finance options
Cumming and MacIntosh (2006)	Deals backed by Canadian tax-driven VC vehicle in the period 1997-2001	Canadian Venture Capital	Province-level VC demand and supply in the number of investment and dollar value invested	Province GDP growth, 5-year corporate lending rate, prior-year stock market return, trend term, tech bubble dummy	Canadian tax-driven VC vehicle have higher agency costs and lower profitability than private VC funds
Beuselinck et al. (2007)	270 unquoted Belgian PE-backed companies covering 1985-1999	Belfirst	Accounting accruals of PE-backed firms	Financial reports variables, years of business	Quality of financial accounts significantly improved when a PE becomes a shareholder
Gurung and Lerner (2008)	11000 LBO transaction closed from 1980-2005	CapitalIQ	Citation intensity of patents of PE-backed firms	Post-LBO dummy, event year dummy, peer average	Patent of PE-backed firms in the year after the investment is more frequently cited.
Cumming et al. (2009)	50 VC and PE funds from 17 countries	Galante Database, Regional and national VC association, management firm and PE fund website	Fixed fees, performance fees, clawbacks, cash-only distribution	Fund manager characteristics, fund characteristics	Legal conditions have the most statistically economically significant effect on compensation across countries. Poor legal conditions are correlated with higher fees and more clawback
Gurung and Lerner (2010)	11135 country-industry-year observations of PE-backed deals across 20 industries in 26 major nations from 1997-2007	CapitalIQ STAN	Industry performance of relative growth rate of productivity and employment cross countries	PE-backed dummy, a fraction of total imputed PE investments divided by total production	PE-backed firms are on average best-managed ownership group in the sample. PE-backed firms have improved operations
Stromberg et al. (2011)	2151 LBO-backed deals from 1997-2010	Reuters, LPC, Dealscan, Dealogic	Default, restructuring types, outcomes, recovery rates	PE-backed dummy, financial characteristics, financing activities in the last 5 years, market and industry condition	PE-backed LBO financing is less likely to default. When firms do default, PE-backed LBO restructure more often out of court and faster
Driessen et al. (2012)	958 PE funds raised from 1980-1993	Thomson Venture Economics	Abnormal return, NAV	Market return	VC funds have a higher CAPM β while the reverse is true for LBO funds. NAV reported by inactive and mature PEs are highly upward biased
Heugbebaert and Manigart (2012)	362 investment rounds in 180 different Belgian investee	public, commercial database, VC annual reports and websites,	Pre-money valuations	Dummies of VCs' business type of capital VC, university VC and government VC, firm characteristics,	VC with greater bargaining power negotiate lower valuation than independent VCs

Author (s)	Sample	Data Source	Dependent Variables	Key Independent Variables	Main findings
	companies from 1988-2009	press release, Belgian Venturing Association		financial statement variables, cross-border dummy, IPO market share, VC firm size, syndication dummy	
Axelson et al. (2013)	2467 international sample of LBO deals from 1980 to 2008	CapitalIQ, LPC/Dealscan	Value-weighted vintage-year PME, fund PME	D/EBITDA, EV/EBITDA, LIBOR, high-yield bond spread over LIBOR, PME in the previous period, and fund size	LBOs are correlated to the cross-sectional factors. Variation in economy-wide credit condition is associated with higher transaction prices and lower buyout fund returns.
Brown et al. (2013)	12545 LBO and VC funds of 5128 PE firms by March 2012	Burgiss	NAV bias	Fund timing, peer chasing, logarithmic fund PME, IRR-tercile of fund	Underperforming managers inflate reported returns of NAV during fund raising process
Harris et al. (2014)	1400 US LBO and VC funds	Burgiss, Cambridge Associates	IRR, Investment multiples, PME	Total stock market value	LBO fund performance consistently exceeds public markets. VC fund outperformed public equities in the 1990s and underperformed in the 2000s

Note: The summary of literature is sorted by year of publication from the oldest to the newest.

1.4. Motivation for the Research

The motivation for this study lies with the value that PE managers, who are financial specialists such as accountants, lawyers, and merchant bankers, provide financial services vis-à-vis firms producing goods and services (Sahlman, 1990). This study is motivated by the existence of singular patterns in assessing the performance of PE financing, such as meeting the PE sponsors' required rate return, or non-monetary profit brought in by the PE managers. The study focuses on examining the PE financing cost borne by PE-backed firms. It assesses the favourability of formal and informal institutions in financial ease. It investigates the association between institutional environment and financing cost. This study involves cross-disciplinary work in different approaches to capital structure, organisation economy and institution. The motivation for this study is also to explore the implication of the theories in the scenario of PE financing, a growing alternative financing segment that deserves more research attention.

1.4.1 Justification for the study of financing cost

Diamond (1984) asserts that an entrepreneur must retain an expected return, after netting all the fees, at least as high as he/she would obtain by sidestepping intermediaries to contract directly with depositors. Based on this proposition, this study assesses the economy of PE financing using financing cost from the enterprises' perspective since we learn little from existing studies. The financing cost I apply in this study is the reciprocal of the enterprise multiple PE managers offer to their fund-providers (LPs or fund unitholders). I focus on the fund-demand side of enterprises because, from a socially optimal view, enterprises are the building blocks of the economy and the main source of employment and innovation. Anecdotal evidence reveals that PE funding, as measured in nominal dollars, is expensive. For example, the required rate asked by VC investors in the EU can exceed 15% (Baeyens

and Manigart, 2006; PWC, 2015). The rationale for entrepreneurs to choose external financing through PEs is that they are informed agents who provide a value-added service of signalling, monitoring, and screening (Chan, 1983; Fulghieri and Lukin, 2001). However, the service from PE managers is not without cost. Chan (1983) argues that the cost paid to professional advisors in PE financing is a critical component of the total financing cost. Blyler and Coff (2003) argue that PE firms may take advantage of the centrality of their network to accrue rents, regarding brokering information resources.

My study builds on organisational economics that points to transaction cost economising by PE financing intermediaries. My argument is that PEs should contribute to real economic growth in that they raise fees[3] and accrue "rent". The term *economic efficiency* is a generic label in transaction economics to measure and evaluate the performance of certain activities. In this study, I explore a series of precise measurements of transaction cost because of perceived financing inefficiency. The measurements include both explicit and implicit costs enterprises bear during the process when they finance through PEs:

- *How does VC improve market information transparency through voluntary disclosure?*
- *To what extent do PEs help raise debt through structured and unsecured corporate debt in LBO financing?*
- *How much do the intermediary fees, if any, add to the overall cost of PE financing?*

[3] Most PE funds use a homogeneous compensation scheme of annual management fees of 1.5% to 2.5% of committed capital and 20% carried interest.

1.4.2 Justification for studies of the institutional environment

As argued by Bruton et al. (2005), the potential implications of pursuing an institutional perspective versus a purely economic-based perspective can be significant; I expect studying an institutional environment could enhance my understanding of the financing cost of PE financing and the overall economic efficiency. When examining the performance of PE financing, it is necessary to apply the existing laws and regulations that presumably shape the professional behaviour of PE managers as well as the PE-backed entrepreneurs. The argument is that a certain level of shareholder rights or creditor rights contribute to addressing adverse selection and the moral hazard problems in firm-level financing choices and market-level information efficiency (Cumming et al. 2009; La Porta et al., 1997; 1998; 2000). In the section on institutional background, this study will answer the following question:

- *To what extent does the content of creditor rights and shareholder rights determine the explicit and implicit cost of PE financing?*

Considering that the activity to obtain and successfully execute legal rights is highly subject to clearly delineated and efficiently enforced rights (Armour and Cumming, 2008), the current study will examine the following question about law enforcement:

- *How much does the enforcement of laws strengthen the above effects?*

A natural way to tell the difference between formal institutions is to use country borders. However, cross-border PE financing is growing rapidly. After the 2000s, 34% of European VC and PE firms raised funds to invest in the non-domestic markets (EVCA statistics, 2003-

2007) whereas 35% of all Asian funds in 2004 were invested internationally (Wright et al., 2005). As a result, the formal institution falls short in explaining the overall financing efficiency of PE because it offers the "fundamental tools." To gain a comprehensive understanding of this business, one should also consider informal institutions such as business practices, conventions or even beliefs.

Recently, there has been a "sociological turn" in economic studies such as in behavioural finance and information economics that challenges the core assumptions of mainstream financial theories[4]. As will be discussed in section 2.6, ample evidence on the institutional environment in the literature (sociological literature or legal studies) is based on in-depth interviews, observation of natural settings, and surveys, as well as field research (Bruton et al., 2005; Manigart et al., 2009). Studies in this stream apply connotation reasoning and greatly facilitate our understanding of the PE market. In this study, I explore the heterogeneity of the different types of PE professionals as a law-like professional mechanism. Such a mechanism includes age and social ties that serve as natural and interesting theoretical extensions of this study. Therefore, I examine:

- *Holding the formal institution constant, to what extent do certain informal institutions contribute to financing efficiency, regarding reducing both explicit and implicit costs?*

[4]For example, information economics challenges the efficient market hypothesis (EMH) for "market fully reflect available information", behaviour finance deviates from "rational behaviour" and "risk neutral" (Fabozzi et al., 2014).

1.4.3 Research objectives

This study aims to expand on previous studies by bringing together both the formal and informal institutional environment that presumably determines the economic efficiency of PE financing.

The specific objectives are:

1) To pursue a possible general generic approach for further research in private market financing, I investigate the financing nature of such agents/vehicles rather than the strategies they take by contingencies (as discussed earlier)[5].
2) To explore the substitution hypothesis of financing cost that consists of both explicit and implicit costs.
3) To examine the formal institutions of the legal environment, which includes creditor rights, shareholder rights, and law enforcement. The formal institutions that I examined cover distinct regions of the world (Asia Pacific, the US, the EU, and the emerging markets of China, Brazil and Russia).
4) To identify a series of critical informal institutional features that presumably shape PE professionals' business practice, which determines the financing cost.

Several key choices were made at the study's outset. Considering the diverse subcategories within the PE asset class, and the availability of research data, this study focuses on dominant PE investment strategies[6]: venture capital and leveraged buyouts. The study is based on available data that draw on an existing database as well as information from a complementary

[5] For example, venture capital (VC) transactions generally include three types of investing: seed, start-up, and expansion investment.
[6] There are many PE financing strategies. A common categorisation identifies leveraged buyouts, venture capital, development capital, and distressed investing.

database. This implies the study is based on a large sample and is conducted at the deal level. Inevitably, the study focuses only on transactions from the most developed markets where PE transactions have taken place.

1.5. Contributions of the Research

The study focusses on financing cost from the perspective of fund-searching enterprises. I provide a unique insight into not only explicit costs but also the implicit costs that entrepreneurs bear when financing through PE. My measurement of financing cost addresses the calls by Chan (1983) and Diamond (1984) for more research on the optimal fee level when financing through financial intermediaries. Although the methodological framework is based on other studies, this study focuses on the private placement market rather than the public market that has been studied by many scholars. This study contributes to the literature with some new findings about PE-backed financing. It is the first to categorise the costs of this financing activity into the explicit and implicit costs and investigate what factors drive those costs. The quantified implicit cost I provide in this study will help academics develop intuition relative to PE performance that will be applicable in further empirical analyses.

Examining the financing cost also contributes to the capital structure approach. In an ideal Miller-Modigliani world, the firm value is independent of the leverage ratio (Modigliani and Miller, 1963). In the real world, transaction costs are a problem, which suggests there is an optimal mix of debt and equity for a company. The pecking order theory highlights that the agent problem can be a main cost source when searching for external equity financing (Myers and Majluf, 1984). While investigating PE financing cost, I also develop the literature in corporate governance by contributing to the debate on whether professional investors' monitoring and activism are effective and serve shareholders' interests. Summing the

financing cost of each fund-searching company, we will be able to see a bigger picture of economic efficiency around the PE market.

Agent studies in the PE market show that an agent cost arises not only from competing interests between shareholders and lenders but also from within shareholders and lenders. The uniqueness of a PE-backed deal is that it raises social capital through a fiduciary contract and transforms the capital in an investment fund or partnership investment company. This financing model raises a conflict of interest between GPs and LPs (or fund unitholders), between external investors and internal shareholders, and between secured debt holders and unsecured debt holders. In this setting, a cross-country comparison of creditor rights and shareholder rights is integral to improve my understanding of the agency problem in the private market. In the process of investigating agency problems, this study borrows the theory framework from the finance and law literature. I extend the theory, the majority of which has focused on financing activities in the public market, to a new field, the PE market. Existing law studies do not distinguish the multidimensionality of shareholder rights and creditor rights. In this study, I make a thorough effort to decompose legal rights into different sticks and test the individual impact of each stick as well as that of law enforcement. To my knowledge, my study is among the first to show how the institutional and agency theory framework work in the private market.

As regulatory obsolescence is widely expected in an ever-evolving financial market most of the time, the informal institution works as a complement to formal institutional laws. The earliest studies applying the informal institutional approach to explore enterprises' financing

activities are those focusing on the individual transition economy[7] (Nee and Opper, 2009, 2012). This study uses the same analytical framework in a cross-country context to improve my understanding of the boundaries and robustness of this framework. Research on institutional organisations categorises informal institutions as cognitive and normative institutions (Manigart et al., 2002; North 1990; Scott, 1995), which can be creatively interpreted in a dynamic financial world. This study investigates informal institutions using a new set of criteria in the context of PEs' professional practice, reputation bonding, and social ties. Holding a unique sociological perspective, I examine the informal institutions and examine their relationship to PE financing efficiency.

The remainder of this thesis is structured as follows. Chapter 2 reviews the relevant literature and develops a series of fundamental concepts. Chapter 3 explains the research methodology used in the study. Chapter 4 provides the data specification. Chapter 5 discusses the empirical results. Chapter 6 concludes and gives the implications and limitations of the study.

[7] Transitory Economies (those reformed from a central planning economy) such as China, Soviet Union or Eastern Europe. In La Porta et al.'s (1999) classification of legal origin, they belong to the Socialist group.

CHAPTER TWO

Literature Review and Conceptual Framework

This chapter discusses PE financing in the light of economic efficiency. The chapter starts with the critical review of literature that assesses PE financing outcomes with distinct views. This is followed by the conceptual specification of the term PE. Based on the view that PE institutions are financial intermediaries, this chapter suggests a transaction cost-focused cross-country institutional analysis framework to assess the efficiency of PE financing. These discussions serve to broadly set the stage for more detailed conceptual and empirical discussions in subsequent chapters.

2.1. Capital Structure and the Emergence of PE Financing

2.1.1 General background of capital structure

The capital structure literature looks for the best financing choice for a company using different approaches. The trade-off theory suggests that companies will trade-off the benefits of debt, especially agency and tax benefits, against the cost of debt financing, namely the transaction costs (Jensen, 1986; Jensen and Meckling, 1976; Modigliani and Miller, 1963), whereby the optimal capital structure can be achieved. When asymmetric information and agency costs are high, equity finance becomes more important than other finance sources (Jensen and Meckling, 1976; Myers, 1977). The pecking order theory argues that companies will use external equity financing only as a last resort (Myers and Majluf, 1984). However,

recent studies argue that the trade-off theory and rank order of financing preference are not applicable to financing types such as high growth ventures (Fama and French, 2002).

The choice between debt financing and equity financing is also subject to the risk-return preference of the fund providers. Specifically, debt providers' claims are interest and principal payments whereas equity investors share in the firm's upside potential. As a result, compared with equity providers, debt providers consider more the borrowers' debt capacity based on historical financial information, collateral, guarantees, and covenants (Fan et al., 2012). Firm characteristics such as age, size, industry type, and corporate governance practices are essential information used to determine historical performance and future business growth. These characteristics are highly correlated and are critical variables in moderating the relationship between a firm's strategy and performance which, in turn, determines a firm's choice of finance, especially when information asymmetry is a concern in the financing process (de Haan and Hinloopen, 2003). Harris and Raviv (1991) find that firms in different industries are subject to different competition levels as well as accounting principles but show similar capital structure. Regarding firm size, large firms have advantages such as economies of scale and scope, experience, brand name recognition, and market power (Hambrick, 1982), which reduces the risk for the perpetrator of opportunism (Nooteboom, 1993).

Conversely, small firms have proportionately less debt than large firms because there is high asymmetric information. In these cases, the agency theory is applied to explain the financing choice. The agency theory asserts that small ventures are especially sensitive to problems of adverse selection and moral hazard (Gompers, 1995; Nooteboom, 1993; Verwaal and Donkers 2002), hence use less debt to mitigate agency conflicts because of high information

asymmetry (Myers, 1977). For example, most start-up firms lack tangible assets that can serve as collateral. Also, because small ventures have a limited or non-existent credit history, even relationship lending is not applicable (Carpenter and Petersen, 2002).

The tax treatment of interest and dividend payments has a great impact on capital structure choices (Modigliani and Miller, 1963). Firms in countries such as China, Hong Kong, India, Indonesia and Ireland with a classical tax system can benefit from tax gain by using debt financing, whereas firms in countries such as New Zealand, Australia, Canada and Taiwan with a full dividend imputation tax system have no tax gains. As a result, firms with a dividend imputation tax system are expected to use less debt financing and more equity financing. Regarding PE financing, Gompers and Lerner (2000) state that decreases in capital gains tax rates increases the demand for venture capital because more workers are encouraged to become entrepreneurs. Similarly, Michaelas et al. (1999) find that lower marginal corporate tax rates account for the choice of equity financing.

2.1.2 Emergence of PE financing

Entrepreneurial ventures often face financing constraints that negatively affect their investment decisions (Hubbard, 1997) and constrain growth (Carpenter and Petersen, 2002). In addition, positive net present value projects may be denied financing, or companies may be able to obtain only certain types of funding in the presence of market imperfections and agency risks (Carpenter and Petersen, 2002). Despite theoretical and empirical work stressing the role of debt providers' screening and monitoring in reducing information asymmetry, the instruments used by debt providers do not always work, particularly for firms in their early growth stage. The ability to find willing, and risk bearing, funders is essential to success for

an entrepreneur (Green, 1984). The adverse selection approach argues that growth-oriented firms are induced to finance with PE (Fulghieri and Lukin, 2001). `

Given the need for financial intermediaries for certain firms and entrepreneurs and the ineptness of banks in this role, PEs fill this void (Jeng and Well, 2000). Studies at the industry level find that venture fundraising is encouraged by facilitating industrial and research and development expenditure. In practice, it is widely recognised that firms receiving private financing are in a dynamic industry with rapid growth potential (Gompers and Lerner, 2000). The high-tech, biotech, and medical sectors have a higher probability of a successful exit than new ventures in other industries (Das et al., 2003). Based on the World Economy Forum research covering 13,884 PE deals from 1991 to 2008 (Gurung and Lerner, 2010), the most popular industries for PE funds are real estate, renting and business activities (2,737 deals), wholesale and retail trade (1,725 deals), machinery and equipment (1,316 deals) and community, social and personal services (1,162 deals)[8].

The capital market size positively impacts funds raised by firms. Compared with a bank-centred economy, capital markets cultivate a conservative approach to lending and investing (Groh et al., 2011). Well-developed stock markets that allow financial innovation and securities liquidity, are essential for PE undertakings (Black and Gilson, 1998). Also, firms in countries with a large population of institutional investors, such as pension funds, use relatively more equity and long-term debt (Fan et al., 2012). Previous studies show that cross-border syndication also serves as an important source of PE capital. For example, Spain and New Zealand attract a considerable proportion of foreign PEs but their PE firms seldom invest internationally (Barkoczy, 2009). This trend is positive for owners and managers who

[8] The statistics used an aggregate industry classification based on four-digit SIC codes.

have valuable investment opportunities in countries with relatively minor PE markets. They increasingly benefit from internationalisation, enabling larger and more buyouts in these countries where the domestic PE industry is less developed (Vanacker et al., 2011).

2.2. The Economic Role of PE

2.2.1 The PE term

The term "private" implies "non-public" or "untraded". In the context of company law, PE is an ownership interest in companies provided outside the public market. The earliest traceable history of PE (at that time not labelled PE) was solely about venture capital. In 1920, the term "venture capital" was documented in a report by The Industrial Securities Committee[9]. Before 1920, venture investment was executed "informally" between family members[10]. The founder claimed he and his partners "risk capital" and "our business is the adventure" to first describe the industry as "private venture capital" in 1946[11]. Shortly after WWII, formal venture organisations started to develop. Among them, non-family venture models began with the American Research and Development Corp (Rao and Scaruffi, 2011). The first leveraged buyout deals were purchased by Malcolm McLean's Industries Inc. of the Pan-Atlantic Steamship Company in January 1955 and the Waterman Steamship Corporation in May 1955. Under the transaction terms, McLean borrowed $42 million and raised an additional $7 million via preferred stock. The deal was not then labelled as PE (Rao and

[9] The Industrial Securities Committee submitted a report on "The enlistment of venture capital is necessary for the development and growth of the country, as well as for the safety of all investment securities" (Rao and Scaruffi, 2011).

[10] For example, a few wealthy families, such as the Phipps and Whitneys, informally invested in new ventures. Whitney had been investing since the 1930s, founded Pioneer Pictures in 1933 and acquired a 15% interest in Technicolor Corporation with his cousin Cornelius Vanderbilt Whitney (Rao and Scaruffi, 2011).

[11] The organisations were J.H. Whitney and Company, Rockefeller Brothers and Company (later Venro), the American Research and Development Corporation, and two in Silicon Valley, Industrial Capital Corp. and Pacific Coast Enterprises (Rao and Scaruffi, 2011).

Scaruffi, 2011). In the 1980s, leveraged buyout firms still did not refer to themselves as PE firms (Kaplan and Stromberg, 2009).

In recent decades, the PE business was invented in the US and expanded to other areas such as the EU and Asia. However, a common, consistent terminology for this financing term is still absent. In the US, the term PE does not include venture capital (Jeng and Well, 2000). Outside the US, the term venture capital is often used as a synonym for PE (Lerner, 1997). In recent cases, practitioners sometimes use PE to refer to investment buyout funds rather than venture capital funds (Ivashina and Kovner, 2008). In the literature, some authors use the terms interchangeably (Kaplan and Stromberg, 2001; 2009). The term "private equity", in practice, resembles "investment strategies" that includes, but is not restricted to, leveraged buyouts, venture capital, development capital, and distressed investment. In academia, there are two dominant definitions of the PE term: one views PE as an asset class and the other views PE as principal. The following subsections summarise the literature on these two distinct views.

2.2.2 PE fund as an asset class

A large number of studies have examined PE as an asset class of investment funds since PE funding has become an important component of the broader category of alternative investment instruments. According to Driessen et al. (2012), scholars have extended the asset pricing approach on traditional debt and equity to the non-readily realisable securities of PE to evaluate the performance of PE funds.

A traceable way to measure the performance of a PE fund is post- investment realised returns for limited partners (LPs) and general partners (GPs), in terms of cash flow, the so-called

realised and unrealised internal rate of return (IRR) or discounted net cash inflows of PE funds (Cumming et al., 2009; Harris et al., 2014; Kaplan and Schoar, 2005). Another measurement of return is the multi-period risk-adjusted return of the Multi-Period Sharpe Ratio (MPSR) of a VC fund at the end of the lockup period (Terhaar et al., 2003)[12] or a specific quantity measurement such as the public market equivalent (PME) (Kaplan and Schoar, 2005; Sorensen and Jagannathan, 2015).

2.2.3 PE firms as principal

A corporate governance system consists of groups of stakeholders. Among them, PEs usually play the role of a shareholder. This is especially true for venture capitalists. Venture capitalists typically invest in young or emerging companies and typically do not obtain majority control. In certain cases, venture capitalists serve as active stakeholders who carefully observe the firm to track its business potential and monitor agent behaviour to protect against opportunism (Arthurs and Busenitz, 2003). Conversely, in leveraged buyout transactions, the PE firm buys majority equity of an existing or mature firm with the fund having anywhere from 60 to 90 per cent debt collateralised by the target company's assets (Kaplan and Stromberg, 2009). As a result, venture capitalists, as equity holders, are interested in the strategies and investments that will increase the company's value and grow earnings per share. They then compare that earnings power and growth potential with that of other companies in the given industry. In contrast, credit holders such as LBO fund providers look more at the downside risk by assessing the sustainability of a company's cash flow relative to its debt levels and the interest expense such as debt to enterprise value (D/EV) and debt to earnings before interest, tax, depreciation and amortisation (D/EBITDA).

[12] Some analysts do not view illiquidity as a risk and may refer to an illiquidity premium in addition to the risk premium when estimating the required return on an illiquid asset (Calverley, 2008).

The literature on PE as principal largely aims at VC transactions, because VC managers serve as principal based on the level of the VC transaction where the PE fund provides financing (as investors) and the entrepreneurs serve as agents who need financing (Kaplan and Stromberg, 2001). Since VC managers have a claim on the firm's residual income and their potential return depends on the firm's upside performance, VC managers have a dominant incentive to deal with the problems of investees (Baeyens and Manigart, 2006). Although not strictly serving as principals, the leverage applied in LBOs is obtained using equity-like instruments (see Figure 2.1). In practice, LBO firms make important decisions such as cashflow monitoring, strategic and business planning. Most research interests focus on LBOs' role in company restructuring, which includes insolvency risk and business distress (Stromberg et al., 2011; Lerner, 1997).

Figure 2.1 A Typical LBO Funding Structure

Source: Courtois (2013).

2.2.4 The PE industry as a financial intermediary

According to Adam Smith's Wealth of the Nations, specialisation encourages the exchange of goods or services (Smith, 1937). Researchers holding this view argue that the emergence of the PE industry has been associated with the specialisation of financial markets (Rajan and Zingales, 2003). In recent decades, the meaning of this term has evolved and expanded to the area broadly defined as "unlisted shares" or "unlisted debt securities" such as P2P financing and crowdfunding. This study uses a new definition of "non-readily realisable securities" from The Financial Conduct Authority of UK (FCA) to more clearly describe the scope of the study into PE. I submit a general definition of PE as "any non-readily realised security" by which equity capital is raised via a private placement rather than through a public offering.

This study assumes that PE firms are financial intermediaries that act as design and pricing consultants, as well as marketing agents, and enterprises that raise capital. To support this argument, the following three reasons are important:

1) Functions and contributions of PE professionals agree with Diamond's (1984) explanation of the function of financial intermediaries. Diamond (1984) asserts that financial intermediaries that raise funds from lenders (in the context of PE financing, the LPs or PE fund unit holders), promise them a given pattern of returns, lend to entrepreneurs, and spend resources monitoring and enforcing, with entrepreneurs, less costly loan contracts than those available without monitoring.
2) The network view argues that PE managers have a central network position between otherwise unconnected actors (e.g., investors, entrepreneurs) in the capital market, which might put them in a better position to "broker" information or resources (Blyler and Coff, 2003) and grant them access to more shareholders, different stock markets, levels of efficiency and market "hotness" (Cumming and Knill, 2012).

3) Sources of return in PE-financed projects such as GDP, input prices, and interest rates, are observable. Under such circumstances, there is a futures market for the value of the projects whereby PEs could hedge changes in a project's profit in these markets. If there are no active futures markets, then the intermediary can write contracts with investors (especially in VC-financed projects) that depend on the value of the potential return of the investment projects, rather than being responsible for all risks. In either case, the intermediary retains responsibility for all risk that is not observable (Diamond, 1984).

2.3. Assessment of the PE Financing Outcome

As the meaning of the term "private equity" differs, the assessment of PE financing outcomes varies accordingly. Scholars holding an "asset class view" apply asset pricing theories and argue that the return for a PE investment is determined by risk-return trade-off of fund providers (Cumming and Walz, 2010; Megginson, 2004). They serve as investor-side advisors for institutional investors (PE fund unitholders or LPs) such as pension funds, endowments, and foundations, that are concerned with asset allocation, portfolio diversification and further fundraising (Cumming, and Walz, 2010; Kaplan and Schoar, 2005), or as investment advisors for high-net-worth individuals (in most cases, accredited investors). Scholars holding a "principal view" regard PE as managers of the invested companies. Researchers in this stream hold shareholder wealth maximisation value thus serving the investee-side benefit.

2.3.1 Assessing PE financing outcome with an asset class view

2.3.1.1. Cash flow based absolute return of PE funds

The primary method to calculate the return of a PE fund is the internal rate of return achieved over a period. Alternative measures such as net asset value (Cumming and Maclntosh, 2006; Kaplan and Scholar, 2005), the total value to paid-in capital (TVPI), internal rate of return, and value-to-EBITDA have been proposed and developed (Axelson et al., 2013; Kaplan and Stromberg, 2009). Some of these measures have already been applied to the dataset. The principles underlying the model coincide with the input and output framework of Diamond (1984). Diamond (1984) defines the required initial amount of inputs to be normalised into one. Thus, the output expectation at the end of the period could be presented as a percentage return for every unit of input. Return measurement in PE finance takes the above form partly because the observations are easily available from the dominant financial databases (such as VentureXpert and Capital IQ).

2.3.1.2 Relative return performance of PE funds

Researchers focusing on relative return usually use public market return as a benchmark. In such cases, public market information is important because it is used as a basis for comparable company valuation analysis, such as the value of existing investments (such as through initial public offerings (IPOs) and sales), as well an indication of the value of future investments (Brown et al., 2013). As a result, the public equivalent approach (Sorensen and Jagannathan, 2015) is widely applied in this research area.

1. Return decomposition of PE funds

The drawback of absolute performance measures, as discussed above, is that they do not adjust for the market return or the risk of the investment. Existing studies observe the value-added effect of PE funds by decomposing the PE return (unrealised return based on cash flows measurements such as IRR) into systematic risk and alpha. The theoretical models include the Capital Asset Pricing Model (CAPM), and the Fama-French 1- and 3- factor models. The market benchmarks applied include the S&P 500, the Europe Index and NASDAQ (for VC cases) (Driessen et al., 2012; Harris et al., 2014), and the Russell 2000, 3000 (Harris et al., 2014) (see Table 2.1). Harris et al. (2014) also find that, when the small-growth portfolio benchmark is applied, the beta is 1.62 and alpha turns positive. These findings show the assessment of PE fund performance is largely subject to the choice of market benchmark.

Table 2.1 A Summary of Relative Performance Measures of PE Investments

Author(s)	Period	Number of Obs.	β		α*		Bench - mark	IRR (Static)	
			VC	BO	VC	BO		VC	BO
Ljungqvist and Richardson, (2003)	1981-1993	54 LBOs, 19VCs	-	-	positive	positive	-	-	-
Jones and Rhodes-Kropf (2003)	-	1,245 funds	1.11	0.81	4.68%	0.72%	S & P 500	-	-
Kaplan and Schoar (2005)	1980-2001		-	-	-	-	S & P 500	21%	17%
Driessen et al. (2012)	1980-2003	272LBOs, 686 VCs	2.7	1.3	-1.09%	-0.41%	S & P 500	15%	15%
Harris (2014)	1984-2008	589 LBOs, 775 VCs	-	-	>3%	-	S & P 500	17%	14%
Brown et al. (2013)	1984-2008	997 LBOS, 1,074VCs	-	-	-	-	-	14%	14%

Note: *After fees, using different forms of the CAPM model, e.g., CAPM developed by Rubinstein (1977).

The relative return performance is usually conducted at the PE fund level where the Stochastic Discount Factor (SDF)[13] is employed to calculate the dynamic, multistage return performance named the Public Market Equivalent (PME)[14]. A PME greater than 1 suggests that the investment is profitable for LPs. Based on a large sample from 1984 to 2011, Brown et al. (2013) find PMEs of 1.27 (LBO) and 1.26 (VCs). Kaplan and Schoar (2005) use an earlier sample set (1980-2001) and find PMEs of VCs and LBOs as 1.21 and 0.93, respectively. The PME value is highly subject to the chosen benchmark, which is usually in the form of the expected return of the market (see Table 2.1).

The above findings provide useful investment advice for PE fund providers in indicating the required rate to ask from the fund-supply side. However, the benchmark return rate derived from CAPM and the Fama-French model that specifies the conditions (such as risk and return) fits better for actively-traded securities. In the secondary market, the above strategies require frequent purchases and sales. Each transaction incurs costs in the form of brokers' commissions and taxes (Bradfield, 2007).

2. Mispricing in LBOs

Unlike VC deals, LBO deals take place in mature industries like chemicals, machinery and retailing (Gurung and Lerner, 2008). The debt or loan provided by LBO financing is a high-

[13] The SDF is calculated by $m(s_t) = a - b\left[1 + r_M(s_t)\right]$, where *a* and *b* are calculated for each time t (Kaplan and Scholar, 2005; Sorensen and Jagannathan, 2013). In the generalised method of moments (GMM) estimator, SDF is calculated by $m = 1/\prod(1 + r_F + \alpha + \beta r_M)$, where *a* and *b* are constants (Driessen et al., 2012).

[14] The Public Market Equivalent (PME) can be given as: $$PME = \frac{\sum_{t=1}^{T} \frac{dist(t)}{1 + r_M(t)}}{\sum_{t=1}^{T} \frac{call(t)}{1 + r_M(t)}}$$ where X(t) is the cash flow for LP at time t; dist.(t) is the positive cash flow stream that is the return to LPs; call(t) is the cash flow stream that LPs invested in the fund. The dist. (t) and call (t) are then discounted using market returns (rM) (realised or expected). A PME greater than 1 suggests that the investment has been profitable for LPs.

yield one. The cost of LBO financing is directly observable from interest paid by investees for the loan provided. In the context of general risk-free debt financing, the real interest rate plus an expected inflation rate and a maturity premium constitute the total financing cost named the yield. When a risk factor is taken into consideration, the yield will include a yield spread intended to compensate investors for the additional risk as well as for the expected level of credit losses. Investors in corporate bonds focus primarily on the yield spread relative to a comparable, default-free bond, which is composed of the liquidity premium, credit spread and tax issues.

Some studies in LBO finance examine the LBO's role in deal pricing (bid against the invested companies) by using the price indicator of D/EV or D/EBITDA (Axelson et al., 2013; Kaplan and Stein, 1993). In practice, LBO deals are mainly recorded as highly leveraged with average D/EV and D/EBITDA of 67% and 5.4, respectively (Gurung and Lerner, 2008). A large research effort assesses the fairness of LBO fund pricing by comparing the yield spread with comparable benchmark spreads. For example, Kaplan and Stein (1993) examine the median spreads over both prime rate (value-weighted term loan and revolving credit loan spreads) and London Interbank Offered Rate (LIBOR) in the 1980s and find that the statistical spread ranges from 112.5 to 150 bps. Yago and McCarthy (2004) show that leveraged loans generally apply a spread greater than 200 to 250 bps above LIBOR.

2.3.2 Assessing PE financing outcome using a principal view

The return-based approach given in section 2.3.1 provides investment advice for PE fund suppliers. However, the return-based approach could not answer how much financial benefit has been accrued from the demand side. PEs are well known to perform as active

shareholders who also serve as managers of the investment firm. PEs not only strongly influence the board of directors of funded firms but also play an important role in the process of selecting, monitoring and further creating new public companies (Barry et al., 1990; Fried and Hisrich,1994; Gompers and Lerner,1999). On the empirical front, a typical PE financing contract explicitly states the number of board seats that investors may elect (Kaplan and Stromberg, 2009). Cumming (2005) and Jensen (1991) suggest that PE can improve firms' operations by providing "managerial input" into their investment.

Studies regarding PE as principal hold the view that firms using external financing are maximising shareholders' interests. To support that proposition, a large number of PE financing studies applied agency theory to try to evaluate the performance of PE-backed enterprises regarding both ex-post financial and operating performance and compared with peers.

There are studies that find that monitoring by external investors can help alleviate information asymmetry, thus minimising agency or moral hazard costs (Manigart et al., 2002; Wright and Ken, 1998). Birmingham et al. (2003) argue that venture capitalists in the US are known to have a strong impact on monitoring the investees compared with debt providers. With LBO financing, Stromberg et al. (2011) argue that PE sponsors had developed unique skills that enable them to understand restructuring. Unlike public firms, Axelson et al. (2013) argue that PE funds optimise the capital structure in companies they acquire to take full advantage of the tax and incentive benefits of leverage (trading these benefits off against the costs of financial distress). A finding about 76 buyouts of manufacturing firms in the 1980s showed that the impact of these transactions on cumulative innovation is marginal (Kaplan and Stein, 1993). A recent study by Lerner (2011) showed that innovation activities are more

frequently cited after PE involvement. Tom et al.'s (2015) recent analysis of the UK PE industry from 1945-2010 finds that when firm-specific resource characteristics are complemented by governance skills from dedicated PEs, the firm's performance will be enhanced. A cross-nation and -industry study by Stromberg et al. (2011) showed that the productivity of PE-backed industries measured by a variety of measurements such as stock performance and subsequent financial performance, had grown more rapidly in the past five years. Sorensen et al. (2014) report that once a company is in the hands of PE funds its free cash flow increases. In a recent study of PE participation in restructuring transactions, Stromberg et al. (2011) suggest that PE-backed firms restructured roughly 40% faster than average firms. The firms also move more rapidly through filings than average firms, which means they survive more often as an independent entity, either by reorganising the firm directly or through a sale to a financial buyer. They reorganise at a higher rate and liquidate piecemeal at a lower rate.

2.4. PE Financing in Light of Economic Efficiency

By far, the natural starting point to judge the efficiency of the financing sector is based on financing facilitation, regarding transaction volume or market capitalisation (as a proportion of GDP) (La Porta et al., 1997, 1998; Lerner, 1997). However, neither transaction volume nor market capitalisation serves as an ideal proxy for efficiency. Economists have produced a large volume of theoretical and empirical knowledge about economic efficiency (see Table 2.2). In this section, I address economic theory to some extent because classical finance and economic theory share the same principles. The analysis of efficiency in financing a deal applies microeconomics, whose fundamental principles include utility maximisation and the Nash equilibrium. Under certain optimistic or restrictive assumptions, economic efficiency

for one unit can be generalised into a socially efficient equilibrium (Koopmans, 1951; Lange, 1942). As discussed in section 2.2, this study regards the PE industry as intermediaries that

Table 2.2 The Concepts of Economic Efficiency

Definition	Argument	Initiator
Allocation Efficiency	The price is equal to marginal cost. At this point, the social surplus is maximised with no deadweight loss.	Markovits (1975)
Productive Efficiency	A situation in which the economy could not produce any more of one good without sacrificing production of another good.	Samuelson (1962)
Distributive Efficiency	Occurs when goods and services are received by those who have the greatest need for them.	Lerner (1944)
Pareto Efficiency	A state of allocation of resources in which it is impossible to make any one individual better off without making at least one individual worse off.	Pareto (1902, 1916)
Dynamic Efficiency	In general, an economy is not dynamically efficient if the real interest rate is below the growth rate of the economy (sum of the growth rates of population and per capita income).	Abel et al. (1989)
Informational Efficiency	An efficient financial market as "one in which prices always fully reflect available information".	Malkiel and Fama (1970)

are presumed to promote economic efficiency for the entire financial market. As a result, it is necessary to consider the economic efficiency of PE financing using macro-level principles such as the law of one price and the general equilibrium.

2.4.1 A review of the efficiency of traditional financial intermediaries

In a literature review, a number of financing intermediaries-relevant studies cover the topic of "efficiency" though not by that name. I first briefly review studies that examine the efficiency of traditional financing intermediaries (e.g., banks and the public financing markets) before I present my argument.

2.4.1.1 The input and output approach

The input/output approach was first applied to measure the efficiency of the banking system. This approach argues that an efficiency measurement is straightforward if one knows precisely the inputs and outputs a bank produces. In practice, there are two different approaches to define the inputs and outputs. The first is the cost production approach. Under this approach, the number of deposit and loan accounts plus the number of the financial transactions recorded over a period would be taken as the appropriate definition of the outputs; the inputs are purely labour and fixed assets (as a measure of capital in neo-classical production theory) (Mitchell and Onvural, 1996). The second is the cost intermediation approach that, like the cost production approach, allocates interest expense for deposits (Bradfield, 2007). In the literature, the observable output variables are conducted in the context of (net) return to the banks' shareholders. Event studies have been used to assess the return on equity and further determine which parties gain and which parties lose in contests for the control of corporations (Carbo et al., 2003; Mester, 1996).

2.4.1.2 Residual approach

The residual approach assumes that the operation of the financial market is to allocate resources to set prices. If there is a delay in the adjustment of a security's price to new information, there will be nonzero residuals around the time that the new information appears (Bradfield, 2007). The persistence of nonzero residuals means a persistence pricing of the security away from its equilibrium value. Consequently, examining the residuals helps to assess the inefficiency of the financial market. The problem in using residuals as the basis of an investment strategy is that calculating residuals is costly. Explicit costs are incurred to

collect the data and perform the calculations, and opportunity costs are incurred to analyse those data.

2.4.2 Intermediation equilibrium approach

The input-output approach holds a shareholder's (or intermediary's) interest maximising value, whereas the residual approach holds a law of one price value. This study takes the view that PE managers are financial specialists such as accountants, lawyers, and merchant banks, providing financial service vis-à-vis firms producing goods and services (Sahlman, 1990). In assessing the efficiency of PE financing, one should examine the fair pricing of PEs' services, regarding deal pricing and other non-price services, rather than the financing profit of either PE firms or the invested companies.

An ideal parameter analytical framework developed by Chan (1983) highlights the contribution of the VC industry in improving efficiency in a market with imperfect information. Chan argues that financial intermediaries may evolve as informed agents who induce a Pareto-preferred capital allocation, leading investors to a higher welfare state. In an intermediation equilibrium world (*CI*), there is a set of equilibrium combinations such as $\{(p_1,q_1);(p_2,q_2);\cdots;(p_k,q_2)\}$ where *p* is the enterprise's share in the invested project (thus the intermediary holds a share proportion of *'1-p'),* and *q* represents the quality of the project. Assume there are *h* intermediaries who work to connect investors and entrepreneurs and that charge a fee of *d*. Under the assumption of endogenous utility and law of large numbers, the CI equilibrium is given as $\{\phi(p,q);\gamma;d;h\}$, where *φ (p, q)* is the distribution of sets *(p, q),* and *γ* is the proportion of investors with search cost μ.

In conclusion, Chan (1983) suggests in the existence of a competitive market (equilibrium allocations) where resource allocation is efficient or Pareto optimal; there is no way to redistribute resources and make some agents better off without making others worse off. Based on the CI framework from Chan (1983), I explore whether PE contributes to optimal capital asset allocation by examining the $\{\phi(p,q);\gamma;d;h\}$ universe, where:

1) PEs increase the possible share proportion of *'1-p'* by connecting investors and investees through dual-class partnership and by raising funds through innovative financing instruments;
2) PEs strengthen the projects' quality *q* by performing as active shareholders;
3) PEs alleviate the information asymmetry of quality of investable projects *q* by active analyst coverage hence also decrease the searching cost μ for a certain proportion investors γ; and
4) financing through PEs incurs an optimal fee level of *d* given the distribution of sets *(p, q).*

The following subsections give examples from the literature and practice that illustrate the above points.

2.4.2.1 The agency problem in dual-class partnership

Corresponding to the high-risk business nature, the agency relationship in a PE-backed deal is complicated. As noted by Diamond (1984), the functions of financial intermediaries are: to raise funds from lenders; promise them a given pattern of returns; lend to entrepreneurs, and spend resources monitoring and enforcing loan contracts with entrepreneurs who are "less costly" than those available without monitoring. However, potential inefficiencies arise from

the dual-class partnership recognised by Walker (2007) between the following two pairs: investor-PE and PE-investee.

1. The investor-PE pair

PE funds or firms are usually structured in a limited partnership. The funding contributors (limited partners, LPs) have limited liability, i.e., they do not risk more than the amount of their investment in the fund. Such a limited liability feature is attractive to investors with less risk tolerance hence expanding the potential investor group (see Figure 2.1). However, though LPs (or holders of PE fund units) serve as outside shareholders of invested companies, they can hardly impose as much influence as GPs could on invested companies. It is the GPs who discuss the specific proposal in person with the directors (of invested firms), and this makes them accountable for important proposals. The potential principal-agent conflict could also lie in the proxy voting that GPs execute on behalf of LPs at the annual meeting of the invested companies (SEC, 2003). Evidence covering a long-time span supports the statement by Sahlman (1990) that PE firms structure deals to maximise portfolio returns, minimise agency risk, and maximise efficiency in the operation of the PE firm "itself". It is reasonable to expect that LPs and GPs are separate, independent entities.

2. The PE-investee pair

Given that there are expectations of financial results and programme outcomes for the various stakeholder groups in a single company, Stout (2001) argues that the shareholders' interests can be "team specific". A PE fund is essentially a closed-end fund with a finite life, rather than entrepreneurship whose life is infinite. The GP has an agreed period, usually of the order of 10 to 12 years, in which to return capital to the LPs. PEs are generally financial investors who search for financial gains (Hellmann, 2002). The State Small Business Credit Initiative

(SSBCI, 2014) states that scarcity of capital allows VCs to invest opportunistically rather than engage in the risks/rewards of company building and they are less inclined to engage in the "missionary work" of mentoring entrepreneurial leaders because VC focuses more on "wins" rather than "mistakes". Agency problems have also been found at both the transaction and fund level given that LBO firms have different incentives from managers of typical large public firms (and LPs) (Axelson et al., 2013). LBO studies find that when the price rises, GPs undertake buyouts in riskier industries and with somewhat higher leverage ratios. Managers who "cash out" a large fraction of pre-buyout holdings at the time of the deal may have a greater incentive to take part in an overpriced or poorly structured transaction (Kaplan and Stein, 1993).

Also, PEs activeness in exercising their rights are different from those of other shareholder groups such as firm founders and investment partners. In practice, PE financing contracts usually enable PEs to separately allocate cash flow rights, voting rights, board rights, liquidation rights, and other control rights (Fater, 2009). The implications of the separation of financial ownership and control could raise the concern about agency problems (Jensen and Meckling, 1976).

2.4.2.2 PE financing contract with embedded contingencies

Most PEs provide financing in the form of hybrid securities, such as convertible preferred equity or structured debt (Lerner, 1997). The evidence coincides with the comment on financial intermediaries by Diamond (1984): "When there are no future markets for the value of the projects, financial intermediaries will write contracts with investors whose promised return is contingent to investment project." In business practice, direct VC investments are generally structured as convertible preferred stock rather than common stock. Indirect VC

investment takes the form of funds or an LLP, which is a hybrid of the corporate and partnership forms with a contingent claim on investees' residual interest[15]. The widely used convertible security also contains restrictive covenants whose violation triggers the rights of the investors to redeem their investment (Gompers, 1995; Sahlman, 1990). If all goes according to plan and the business is wildly successful, the holders convert their notes and get to participate as owners when success has been achieved. Thus, the holders of convertible notes get the best of both worlds. Fater (2009) finds that start-up and early-stage corporations can make extremely effective use of convertible instruments, including those with provisions. Given that LBOs can result in excessive defaults (Toms et al., 2015), in responding to the high credit risk, LBOs capital is financed mainly by structured debt with banks serving as senior secured debtholders and risk-seeking investors, or GPs themselves, serving as unsecured debtholders. Mezzanine financing is also widely applied in LBOs that attach warrants or conversion options in debt or preferred shares (Courtois, 2013) (see Figure 2.1).

I argue that the above innovative securities issuance serves the well-known promotion purpose (Mahoney, 1995) for two reasons. First, it decomposes the risk into different layers (such as loan tranches A, B and C in Figure 2.1) to make funding available to a wider range of investors of different risk aversion (especially pension plans and insurance funds that are now restricted from investing in lower-rating securities). Secondly, it pools small amounts of funding from a number of individual investors (such as pooling LPs altogether to form a VC fund or LBO fund) thus raising a larger amount of capital.

[15] Source: Zephyr.

2.4.2.3 Analyst coverage

Chan (1983) argues that there is an economy of scale in intermediaries' operations because intermediaries introduce the entrepreneurs to provide clients with higher return projects. Except for compulsory disclosure requirements enforced by public agencies such as stock exchanges and security regulatory commissions, financial intermediaries can contribute to information efficiency through "non-price services" of voluntary disclosure or analyst coverage. Studies of such "non-price services" provided by financial intermediaries in IPOs suggest that there is a positive relationship between analyst coverage and price premium (Burns et al., 2007; Chang et al., 2013). Although the PE market has been widely acknowledged as having an asymmetric information problem (Brown et al., 2013), studies have shown that information disclosure helps improve information transparency in the PE market. Cumming and Knill (2012) argue that disclosure creates investment opportunities visible to the broader community thus providing opportunities to celebrate progress. SSBCI (2014) suggests that it is important to find ways to communicate progress through early success stories.

Information transparency is of key importance in deal/asset pricing. Without it, the law of one price does not hold. In practice, the equity risk premium is specifically defined as the expected excess return over and above a long-term government bond yield. In other words, the fund sponsor asks for a higher risk premium (under-pricing) thus offers a lower price for PE offerings than otherwise equal investment tools. In the next section, I explore in detail PE managers' contribution to market information transparency in the three pricing stages of PE financing: fund-raising from LPs (marketing), negotiating the deal price with invested firms (drawdown/investment), and liquidating the investment at a fair price (realisation of returns and exit) (see Figure 2.2).

[Image removed for Copyright compliance]

Figure 2.2 A General Funding Stages of a PE Fund

Source: Courtois (2013).

1. Fund raising stage

PEs play the role of a prudent investor[16] who is responsible for the fund investors (or financing providers). Under this condition, adverse selection is expected to be addressed through intensive screening, which includes due diligence and market segmentation research, before investment (Lerner, 1995). Firm-level selection criteria for PE funds include successful exit, innovation, and growth (Cumming et al., 2014). In this stage, the entrepreneurs need to be able to generate sufficient interest from diverse capitalists to negotiate higher valuations; top-tier capitalists are better able to identify high-quality entrepreneurs or the most promising ventures (Heughebaert and Manigart, 2012; Sorensen, 2007). However, evidence shows that the information disclosed by VC managers is not specific or investment valuable because they are more likely to overvalue their fund returns in the VC's fund-raising stage. (Cumming and Johan, 2009)

[16] One policy decision that potentially had an effect on commitments to venture funds through supply changes is the US Department of Labor's clarification of the "prudent man" rule in the Employment Retirement Income Security Act. The 1978 rule states that pension managers had to invest with the care of a prudent man. Consequently, many pension funds avoid investing in venture capital entirely.

2. Investment and exit/liquidation stage

Toms et al. (2015) argue that PEs are more effective in processing information than individuals and adjust corporate valuations accordingly when new information reaches the market from the firm. Such "knowledge assets" (Toms et al., 2015) grant GPs advantages over entrepreneurs in the process of valuing a certain deal. In practice, a certain component of material operational and financial information that PE-backed firms file is vital for asset pricing and goes beyond simple "veracity" in accounting terms, since they require certain estimates, assumptions and, as a whole, are vulnerable to professional judgements. In this case, PE managers encourage price discovery through "expert" use of information as part and parcel of fair pricing at liquidation (Schacht, 2014). There are limited studies covering voluntary disclosure of PE-backed companies at the post-investment and liquidation stage. An industrial level survey shows that after investment, VCs increase their expenses to release influential soft information such as prototyping, market presence, and distribution channels. Unfortunately, such a cost has a weak causal relationship with subsequent productivity (Manigart et al., 2002).

As discussed in section 2.2.2, asset pricing methods are widely applied in PE deal valuation and PE fund performance measuring. The fairness of asset valuation (e.g., D/EV, D/EBITDA in LBO deals; paid-in capital, bidding price in VC deals), as well as the liquidation valuation (e.g., IPO stock pricing in VC deals), is subject to complete and unbiased information. As a result, information efficiency is crucially important at the investment and exit/liquidation stages.

Further, both the absolute and relative return analysis are based on theories and models such as present value models, multiplier models, and asset-based valuation (Basu, 1977; Block,

1999; Fama and French, 1995; Sharpe, 1964). The models are, by nature, simple numerical, analytical tools. The choice of the models and the derivation of inputs require skills and judgement. Given the scarcity of reliable information and the divergence of professionalism, pricing of the deal and liquidation of a PE investment have a high level of uncertainty. However, the PE fund's role in promoting information efficiency in these two stages remains inconclusive.

2.4.2.4 Advisory fees

As noted above, PE financing is arranged as a partnership structure (see Figure 1.1). Lerner (1997) addresses partnership investment behaviour in two ways; one increases the size of the "pie" and the other simply changes the relative size of the pie. Based on the parameter analysis framework of Chan (1983) and Diamond (1984), in a Pareto-optimal allocation of resources, it is impossible to make any one individual better off without making at least one individual worse off. In other words, entrepreneurs must benefit more than the fee of level d for financing through intermediaries; the term $V^* > r$ must hold for depositors; the intermediary must receive an expected return net of monitoring costs and any deadweight penalties incurred, which are at least zero. As long as depositors and entrepreneurs pay a fee that is not optimal, intermediaries add limited value to the economy. As a result, understanding how the productivities are distributed among different interested parties is essential for further understanding of the economic efficiency of PE financing. Researchers in this area refer to the alignment of interests between two pairs of counterparties who share the productivities in PE transactions: PE fund holders and invested firms (sharing the residual returns); and PE fund holders and the new investors (sharing potential upside performance or reduced financing costs) (Gompers and Lerner, 1999).

From the perspective of VC fund stakeholders, the investment return can be defined regarding various fund performances. Further, VCs rarely pay dividends but rather capitalise them until liquidation time when the profit becomes available to the founders (Cumming, 2005). There are some studies that focus on quality indices such as the probability of fully or partially exiting through an IPO or merger and acquisition (M&A) (Cumming et al., 2014; Wang and Wang, 2012), or "better terms" for the IPO process (Gompers and Lerner, 1999).

From the perspective of the invested companies, the benefits PE bring to the companies are not translated into superior returns for their principals (i.e., the investors). A related issue is that the fees that PE funds charge their investors may be too large (Driessen et al., 2012). Thus, they may outperform before fees but underperform after fees. Kaplan and Schoar (2005) find that VC can result in lower net-of-fees returns than the market index. Sometimes, exiting itself can lead to financial distress for entrepreneurs (Lerner, 1997). Statistics from the British Venture Capital Association (BVCA) support the above arguments. The IRR on all funds since inception in December 2014 is 13% per annum. Given that the average enterprise multiple during the same period was 54.43, in the context of equity pricing, this multiple suggests an annual return of only 1.8%. Other return measures such as TVPI suggest a yield of 167.9%, and that DPI yields a return rate of 110.6%, which demonstrates that VC funds have, in aggregate, returned more than all the initial capital and fees back to investors (PWC, 2015).

2.5. The Transaction Cost Approach

When firms search for external financing via financing intermediation, financial intermediaries are expected to reduce the transaction cost or make use of their cost advantage in certain tasks (Diamond, 1984). Contrary to the limited explanatory power of return-based

measurement discussed in section 2.3, I expect the transaction cost approach to contribute more to the understanding of economic efficiency in this area.

The term transaction cost was proposed by Coase (1937) and further developed by William (1981) who used it to explain the economy of traditional goods transactions. Most classical economic theories consider transaction costs; classical Keynesian and neo-Keynesian theories assume transaction costs are high in the capital markets (Keynes, 1936) whereas the efficient market theory (Malkiel and Fama, 1970) and arbitrage pricing theory (Ross, 1976) neglect transaction costs. In the context of financing theory, the Modigliani-Miller proposition excludes transaction costs, information heterogeneity, or taxes; the value of the firm remains constant regardless of the financial decisions made by management (Modigliani and Miller, 1958). In corporate governance theory the ideal state assumes that there is no agency cost (Copeland et al., 1983). Game theory assumes high information and enforcement costs for some but not all transactions (Nash, 1950). Similarly, when analysing Nash behaviour vis-a-vis entrepreneurs searching for VC financing, Chan (1983) includes transaction costs, which take the form of searching cost μ as well as the service fee d charged by intermediaries.

Transaction cost theory has been widely applied in research areas of entrepreneurship, institutional economics, industrial economics, and transition economy. In empirical studies, the transaction cost is quantified as a proportion of the price (e.g., Bhardwaj and Brooks, 1992; Stoll and Whaley, 1983) and takes either the form of cost-effectiveness (Bruining et al., 2005; Nee and Opper, 2010) or time saved (Nee and Opper, 2010). Few studies in PE financing cover the transaction cost theory. The limited examples are restricted to VC transactions, which include tax and capital transaction tax provided in VC fund-raising (Jeng and Well, 2000) and syndicated VC-investment advantages/disadvantages (Bruining et al.,

2005). Because individuals and groups in PE transactions face different transaction arrangements, the law of one price does not apply. Borrowing ideas from the literature on general financing intermediaries as well as PE, I argue that the transaction cost of PE financing includes agency cost, opportunity cost and illiquidity.

2.5.1 Agency cost

Studies relevant to agency cost mostly target the general means of external financing. In general, agency costs arise from the moral hazard, cost of administration, information gathering, and search efforts (Fama, 1985; Mayer, 1988; Myers and Majluf, 1984). It is assumed that the agency costs of external equity increase as the percentage of financing supplied by external equity goes up (Copeland et al., 1983). PE financing, especially VC-backed financing, will result in a dual-class partnership and subsequent principal-agent conflict. New shareholders will have to incur monitoring costs of one form or another to ensure that the original owner-manager acts in their interest (Copeland et al., 1983). Agency cost is not directly observable in research studies. However, the efficiency of governance can be observed in productivity or advisory fees *d* (see section 2.4).

2.5.2 Opportunity cost

In an efficient allocation of capital resources, there will be no further opportunities for mutually beneficial exchanges (Bradfield, 2007). At the transaction level, Diamond (1984) suggests viable conditions for financing through intermediaries: 1) the depositors must receive an expected return of *r*; 2) the financial intermediaries must receive an expected return netting service cost; and 3) the entrepreneur must retain an expected return at least as high as he/she would get by sidestepping intermediaries and contracting directly with depositors. As discussed in section 2.3, the visible opportunity costs pertaining to VC

financing are market returns such as the S&P 500, Europe Index, and NASDAQ (for VC cases) (Driessen et al. 2012; Harris et al., 2014) but the opportunity cost is mostly set as market yield of LIBOR (Kaplan and Stein, 1993; Yago and McCarthy, 2004).

2.5.3 Illiquidity

As described by the Private Equity Growth Capital Council, the business model for a typical PE fund relies on an exit of three to seven years from the time an initial investment is made (Levine and Mangiero, 2014). Illiquidity raises the required rate of return of PE fund providers and further increases the financing cost. Risk premium logic asserts that market value accounting in the presence of asymmetric information biases market prices downward and increases liquidity risks (Calverley, 2008). The PE's role in addressing the illiquidity premium lies in the active analytical coverage of their investees. As discussed in section 2.4.2.3, both pre-investment screening and post-investment information disclosure services provided by PE managers contribute to information transparency. To what extent liquidity can be addressed depends on how much the PEs make the investment opportunity (objective's quality q in the *CI* framework) available to potential investors γ (in both the fund-raising and exit stages) with a given searching cost μ.

2.6. Institutional Environment

The transaction costs regarding agency cost, opportunity cost and illiquidity discussed in section 2.5 are largely associated with information asymmetry. However, to gain a full representation of transaction costs in PE financing, one should consider the institutional environment. As Benham and Benham (2001) suggest, once researchers have access to credible information on transaction costs across various institutional settings (e.g., laws,

regulations, and law enforcement), the information would be highly useful in providing an answer to the fundamental question of economic efficiency.

The term institution refers to a complex mixture of rules, norms, conventions and behavioural beliefs that together form the way in which people operate and determine how successful they are in achieving their goals (North and Weingast, 1989). To find a theoretical foundation that could better explain PE financing efficiency, previous studies show that institutional environment factors are helpful and worth further development. There are reasons for the importance of the institutional environment.

Most of the literature summarised in section 2.4 considers the institutional background though not in uniform terms. Most existing studies focus on a certain aspect of PE funds' (or invested firms') performance or GPs' activities within (or across) country border(s) (i.e., institution border) or simply transform the institutional factors as control variables. As recommended by Busenitz et al. (2000), Wright et al. (2005) and Scott (1995) similarities and differences in PE behaviour around the world are the result of the configuration of regulatory institutions, cognitive and normative behaviour in each country. The next section discusses the institutional analysis of the literature on PE financing activities.

2.6.1 Formal institutional factor

Regulatory factors refer to the widely recognised law and finance factors (La Porta et al., 1998) and the quality of their enforcement (Cumming et al., 2014). Regulation reduces transaction costs through a system of rules, regulations, and governance (e.g., registration, record keeping, and disclosure) (McCaffrey and Hart, 1998). Existing studies concerning securities laws mainly cover transaction activities for over the counter (OTC) products in

public broker-dealer markets (Bradfield, 2007; Lo, 2008). However, the basic principle is helpful when applied to the PE market.

Like other financing intermediaries, PEs are subject to extensive regulation by a variety of regulatory bodies. It is clear that the regulations regulating PE financing are not uniform. The section next summarises the existing legal literature about PE financing.

2.6.1.1 Fund raising stage

Judge-made common law matters in the PE context in a way triggered innovation in both the law and trading venues that mutated into modern security markets (Morrison and Wilhelm, 2007). The regulatory environment that encouraged the emergence and growth of enterprises, especially in emerging markets, produces better governance structures (Cumming, 2005), more syndication (Bruining et al., 2005), international capital flow (Cumming et al., 2009; Wang and Wang, 2012), cross-border labour flow (Bozkaya and Kerr, 2014; Cumming and Li, 2013), and more high-tech investments (Hua et al., 2016). Cumming and Fleming (2015) acknowledge financial deregulation as a driving force of the emergence of new legal entities such as LBO partnerships. Also, regulations that enhance or permit pension fund participation as limited partners in PE funds stimulated venture capital markets in the US (Poterba, 1989) and Europe (Cumming and Johan, 2007). Based on the arguments that major stimuli to financial innovation and new securities design come from incentives to circumvent ever-changing tax codes and regulations (Finnerty, 1992; Miller, 1986; Tufano, 1995), my study observes the thriving of LBOs that occurred in the 1980s, reaching its peak in the early 1990s (Kaplan and Stein, 1993; Stromberg, 2008). The phenomenon paralleled the emergence of structured financing instruments and further evoked refinements of regulations in the private

placement market (see Table 2.3), i.e., asset-backed securities (ABS) or collateralised mortgage obligations (CMOs).

Table 2.3 Economic Events, Innovative Securities and Amendments to the Securities Act (the US market)

Year	Economic Events and Innovative Securities	Amendment in Securities Act
1980	Federal Reserve discount rate rises to 13 % Inflation rate at 13.5 % for the year Home purchase revenue bonds	
1981	Interest rates peaked at 21.5 % Price of oil peaked at $39 a barrel Foreign currency swaps bonds with detachable warrants offered The first offering of an original-issue discount convertible The invention of the first debt-for-equity swap portfolio insurance	
1982	Shelf registration started Unemployment rate at 9.7% for the year Second mortgage pass-through securities Extendable notes with rates adjusted at holder's puttable option Federal Home Loan Mortgage Corporation offers zero coupon bond	Regulation D
1983	CMOs Libor-based floating rate notes Swap equity of American company for foreign debt	
1984	Dutch auction rate preferred stock Fannie Mae zero coupon Fannie Mae 35 zero coupon subordinated cap debenture Synthetic bonds Eurobond discount mortgage-backed bonds Zero coupons by mortgages	
1985	Zero coupon sterling issue new hybrid bond-dual series discount bonds Flexible Credit Account Floating rate securities-capped, mini/max, mismatched, partly paid nondollar FRNS Collateralised securities-multifamily pass-through, leaseback commercial mortgage pass-through, cross-collateralised pooled\financing pooled nonrecourse commercial mortgage daily adjustable tax-exempt securities, municipal put option securities Periodically adjustable rate trust securities	
1986	All interest rate ceilings had been eliminated except for the ban on demand deposit interest, which was then the only remaining substantive component of Regulation Q.	Regulation Q
1990		Rule 144A

Source: Black (1991).
Note: Regulation D specifies various rules prescribing the qualifications needed to meet exemptions from registration requirements for the issuance of securities.

2.6.1.2 Post-investment stage

In the post-investment stage, the mechanism that securities laws use to reduce the cost of agency and resolve disputes is to apply standardised securities contracts (describing the obligations of various parties and burdens of proof, thereby encourage equity financing of the firms) (La Porta et al., 2006). North and Weingast (1989) provide evidence showing better contracts generate more credible commitments and thus should reduce the cost of the contract. An example is the emergence of tailor-made financial contracts, among which convertible debt and preferred equity were widely applied in PE financing (Cumming, 2005; Kaplan and Stromberg, 2001, 2003). Cumming et al. (2008, 2015) argue that better shareholder protection laws result in lower agency costs between the entrepreneurs and outside shareholders (e.g., venture capitalists).

2.6.1.3 Exit or liquidation stage

Cumming (2008) and Cumming and Johan (2008) argue that better shareholder protection laws contribute to certain exit vehicles (e.g., IPOs) by reducing the cost of liquidation. Regarding liquidation at a fair price, a certain level of market transparency helps clarify the liability rules for inaccurate or incomplete disclosure to investors. Djankov et al. (2003) comment that an efficient financial market system provides information providers with incentives to collect and present information to investors and holds them liable if they do not. As a result, regulation helps to apply fair valuation clauses in PE contracts (Cumming and Walz, 2010) and prevents rent-seeking behaviour, which arises from mispricing and adjustments towards equilibrium (Toms et al., 2015). Existing markets with low capital gains tax rates positively impact VC markets in the US (Gompers and Lerner, 1999), Europe (Armour and Cumming, 2008) and the rest of the world (Jeng and Wells, 2000).

Figure 2.3 illustrates the regulations covering most PE financing regulation activities at different stages. In summary, the securities regulations fall into two categories: health-safety-environment (H-S-E) (regulations involve mandated changes in production processes and product qualities or types), and information regulations (involve the requirement that sellers attach specific types of information to the goods and services that they sell) (Lo, 2008). The above regulations help solve market inefficiencies such as market power, externality effects, uncertainty and absence of complete knowledge, individuals who are unable to know their own best interests[17] (individuals who are overwhelmed by the complexity of choices), and asymmetric information (corporate managers who know more about their activities than do shareholders or bondholders) (Lo, 2008).

[Image removed for Copyright compliance]

Figure 2.3 The Regulations Covering Most PE Financing Activities

Source: Courtois (2013); Lo (2008).

The quality of law enforcement (also named "the rule of law") varies systematically by legal origin as is emphasised by Djankov et al. (2003) and La Porta et al. (1998) in their studies on capital market efficiency. Common law tradition developed in Britain, characterised by independent judges and juries, gives preference to contracts and private litigation as the means to deal with social harm. The civil law tradition developed in France, characterised by state-employed judges, gives preference to state regulation over private litigation (Djankov et al., 2003). Judge-made common law matters in the PE context because it triggered the

[17] Some theoretical models include investor costs of evaluating potential investments and assume that investors are particularly well-informed (Kaplan and Stromberg, 2001).

innovation in both the law and in the trading venues that transformed into the modern security markets (Morrison and Wilhelm, 2007).

The literature in PE-relevant regulation shares the value of preferring financing ease over financing risk. To be specific, Mahoney (1995) supports a "market reaching" efficiency that includes lowering the barriers to investment, facilitating contract arrangement and easing fund liquidation. Consistently, Jones and Tsutsumi (2009) argue that the highest priority of regulation is to enhance efficiency in the financial sector that would expand and improve capital markets. The second priority is to expand the range and quality of financial products.

2.6.2 Informal institutional factors

Informal institutions refers to a combination of sanctions, taboos, customs, traditions and codes of conduct (North, 1990). They can be further categorised as normative and cognitive institutions (Scott, 1995). The earliest studies applying the informal institution approach to explore enterprises' financing activities in private markets are those focusing on transition economies[18]. Representative studies in this area examine the activities of entrepreneurs under uncertain market conditions, access to scarce capital resources (in the form of public equity) as well as the subsequent corporate performance (Nee and Opper, 2012).

There is a growing literature that reveals informal institutions as driving forces that shape the activities of PE market players. However, as I will review in the next section, studies in this area mainly focus on the discretionary behaviour of PE managers. Few studies discuss the efficiency of PE financing.

[18] Transition economies (those reforming from a centrally planned economy) are such as China, the Russia (previous Soviet Union) or Eastern Europe. In La Porta et al.'s (1999) classification of legal origin, they belong to the Socialist group.

2.6.2.1 Normative institutions

A normative institution has the behaviours and values expected of individuals or organisations (March 1981; Scott, 1995). The norms that determine the appropriate professional setting of the PE market can be found in the literature with diverse emphases such as: 1) based on the agency theory approach, PE managers should protect the investment of the principal (VC) against the harmful behaviours of the agent (entrepreneur) (Arthurs and Busenitz, 2003); 2) based on the functional perspective, PE firms as financial intermediaries should be cost-effective in the areas of moral hazard, cost of administration, information gathering, and search effort (Fama, 1985; Mayer, 1988; Myers and Majluf, 1984); 3) based on the legal nature of the fund sponsors, investors can be long-term, short-term, large block, small block owners (Johnson et al., 2010); and 4) pressure-sensitive or pressure-resistant (Brickley et al., 1988). Stromberg (2008) employs over 20,000 cases worldwide and finds significant changes in board size and composition following an LBO. In his study, Stromberg does not take a country's border as an institution border but rather focusses on the legal nature of certain sponsors.

The earliest record of a VC business is documented in Rao and Scaruffi (2011). The practices of the PE industry are invented, tested and then exhibit appropriateness (e.g., a high level of cooperative behaviour among VC firms during the early years of the industry, capital syndication in early years, and risk diversification in later years). PE funds were then exported to other parts of the world such as the EU and Asia (Bruton et al., 2005; Manigart et al., 2009; Sorenson and Stuart, 2001). Manigart et al. (2009) show that GPs follow the originators intention to replicate what the others had done, regardless of whether it is rational. The fact that the dominant normative logic may be US based does not imply that the local

environment is not important. Local regulatory and cognitive institutions further shape the behaviour of PEs (Wright et al., 2005).

2.6.2.2 Cognitive institutions

Cognitive institutions consist of influence that develops over time through social interactions among the participants (Berger and Luckmann, 1967). Previous studies describe cognitive, institutional factors (e.g., culture effect) as sources of coordination costs, time costs and information problems that influence the profit deal (Bruton et al., 2005; Cumming et al., 2014; Djankov et al., 2003). The costs or profits are similar to what Nee and Opper (2012) call social rewards or punishment, in responding to the social rewards or punishment, cooperative behaviour arises from rational actions. One important cognitive difference worldwide is the strength of social networks. The relationships and connections provided by the networks are alternative means to enforce contracts or sanction violators (Perkins, 2000). One outcome of the importance of these relationships is that the parties often focus more on maintaining inter-firm and interpersonal relations than on immediate profits (Chen, 2001; Pye, 2000). Their findings imply that PE managers' relationships with investment banks grants them "better terms" for the IPO process (Gompers and Lerner, 1999) or helps to "facilitate" a specific exit route (Cumming et al., 2010).

Previous studies also show that the level of interconnections between business people in different countries is different. Social connections in Europe are often much stronger than in the US (Wells and Grieco, 1993). In Asia, the difference is even greater. Asian economies espouse different institutional logics from Western economies, ones rooted in connectedness and relationships (Biggart and Hamilton, 1992; Nee and Opper, 2010). Manigart et al. (2002) document that US-based empirical models developed to examine the interactions between the

VCs and entrepreneurs are not valid in Asia. Asian VC s are less concerned with "efficiency" in dealing with portfolio companies and more concerned with creating and maintaining a strong relationship than their US or EU counterparts. Meyer and Rowan (1977) explain why Asian cognitive forces impacting GPs must be seriously considered when exploring the local market. The cognitive institution also explains that PE funds tend to invest in either regionally closed markets or markets with similar institutions (Megginson, 2004). The most interesting target for the international capitalist is continental Europe. Less developed markets, such as Asia and Latin America, can be challenging for PE firms because of the geographical distance and institutional differences (Manigart et al., 2009).

There are a number of research gaps and limitations in the theoretical and methodological approaches involved in previous studies. For example, studies solve the absolute and relative return of PE funds through adjusting the assumptions in asset pricing models. The mathematical presentation of PE fund returns varies without solving the question of how much, in dollar value, the PE-backed firms are better off. Another shortfall of asset pricing models of PE fund returns is that they do not factor in law or regulations. The law or regulations reflect normative judgements about the efficacy that not only shapes the contracting choice of the PE-investee pair but also the enforcement of the contract. This line of reasoning helps to explain the outcome of PE financing in heterogeneous expressions of innovation (Gurung and Lerner, 2008; Hua et al., 2016), employment entrepreneurship (Cumming, 2005), and cross-border capital flow (Cumming et al., 2009; Wang and Wang, 2012). Regulations have to catch up when the markets evolve their way around regulations (Black, 1991). Informal institution research thus provides the cognitive and normative explanation of the gap between regulation ideology and reality in the expression of home bias (Manigart et al., 2009; Megginson, 2004; Wright et al., 2005); social ties (Cumming et al.,

2004; Gompers and Lerner, 1999); and reputation bonding (Chen, 2001; Pye, 2000). A novel aspect of this thesis is that I review and synthesise this contrasting literature.

My findings complement research on the history of regulatory changes in the private placement market and the role of financial intermediaries. I provide further insight into how the institutional environment impacts on the economy of PE financing by focusing on an important but seldom researched indicator, namely, PE financing from the perspective of PE-backed firms.

2.7. Conceptual Framework

In summary, the discretionary behaviour of PE managers under certain institutional environments largely determines the efficiency of FE financing. Figure 2.4 shows the conceptual research model that examines the influence of the institutional environment on economic efficiency in PE financing while controlling for other determinants such as market condition and investee's business characteristics.

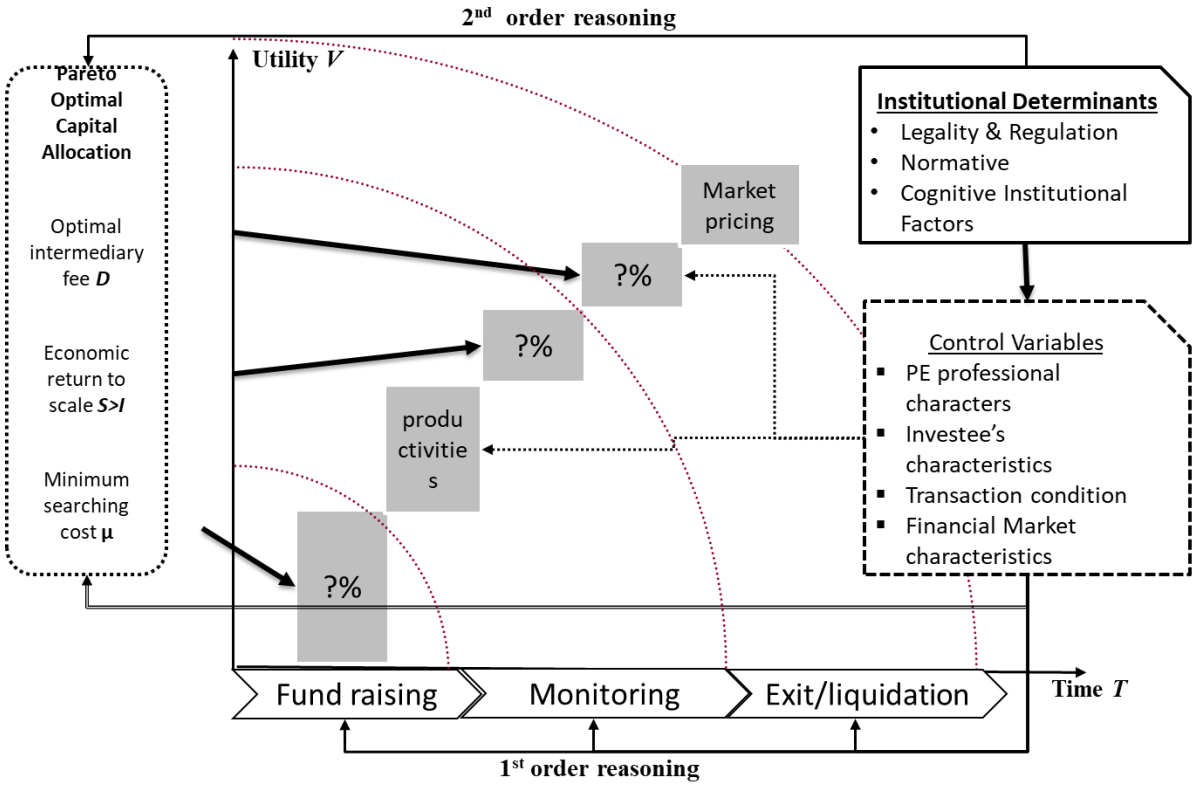


Figure 2.4 The Conceptual Model to Examine the Influence of the Institutional Environment on Economic Efficiency in Private Equity Financing

I argue that one should assess the financing efficiency of PE from a market-level, cost-minimum approach. Based on the framework of Chan (1983) and Diamond (1984), the linear programming problem of my study can be defined as follows:

$$\max_{\phi(\cdot)} E_V \left[\max_{s\in[0,V]} V - D - \phi(S) \right] \tag{2.1a}$$

$$\text{while subject to } \max_{s\in[0,V]} V - D - \phi(S) \geq Ir \tag{2.1b}$$

Where V is the utility from a PE-backed project with the lowest equilibrium expected return; I is the financing volume; and S is the maximum financing volume. If there is an economic return to scale, $S>I$ is possible. D is a uniform fee, the transaction cost function that at least equals 0. To an extent, a PE market is Pareto preferred, which reduces the transaction cost at

varying levels. Optimal PE financing maximises the economic utility (Equation 2.1a) under the condition that PEs improve efficiency. Equation 2.1b shows the net utility after excluding uniform fee *d*; transaction costs are larger than *Ir*, which equals the financing volume times the cost rate.

2.8 Conclusion

Dual-class, dynamic partnership arrangements surround the PE-investor. The PE-entrepreneur makes the efficiency of PE financing a challenge to explore. In this literature review, I find the traditional return-based performance analytical framework falls short in explaining the efficiency of PE financing in the forever-evolving financial market. The transaction-focused cross-country institutional analysis framework shifts attention to examine the nature of the institutional arrangements in which PE financing players compete and cooperate to secure rewards. I advocate that this framework provides a solid theoretical foundation for the above two partnership pairs.

Based on a comprehensive knowledge and critical analysis of existing measurements, this study explores the quantitative interpretation of both direct and indirect transaction costs and formal and informal institutions in PE financing. Statistical models will be developed as hypotheses are generated for each of the predicted relationships.

CHAPTER THREE

Methodology

This chapter presents the quantitative analysis of the unique regulatory constraints and economic norms PE financing confronts. Statistical models will be developed based on a critical discussion of the conceptual development in Chapter two. Hypotheses are developed for the hypothesised relationships. Section 3.1 gives the measurements for both the implicit and explicit costs of VC and LBO financing. Section 3.2 defines the formal and informal institutional factors and section 3.3 illustrates the empirical models applied in this study.

3.1. Transaction Cost of PE Financing

This study attempts to apply transaction cost concepts in the field of PE financing to clarify economic efficiency. I borrow the general framework from Greif (2006) and Homans (1974) that a transaction is any action that involves an exchange of an entity, such as a commodity, reward, sentiment, opinion or information, from one actor to another. I further define the transaction cost of PE financing as a bundle of costs that includes both explicit and implicit costs. The former refers to the direct costs of trading, such as broker commission, taxes, stamp duty and fees paid to exchanges[19] that are observable from the returns at the PE fund-level. The latter refers to the costs of inefficiency such as searching time, information costs, opportunity cost, credit or equity mispricing, and costs incurred from illiquidity that are not captured in the formal fee structure.

[19] Most VC funds used a homogeneous compensation scheme of annual management fees of 1.5% to 2.5% of committed capital and a 20% carried interest.

3.1.1 Explicit financing costs

The financing cost is directly observable from the capital cost of the fund-searching firms that, from the fund supplier's side, is the return required for providing the fund. In LBO financing, the required return is the interest burden. It provides the maximum price that can be paid from the demand side while satisfying the target returns for the finance providers. In VC financing, the price is the enterprise multiple offered to acquire a certain amount of the equity of the investee firms. The offered enterprise multiple reflects investors' outlook of the enterprise's future profit.

When measuring the financing cost of an LBO, one popular measure is the value to earnings before interest, tax, depreciation and amortisation (EV/EBITDA). In previous studies, such measurements average 8 to 10 times the EV or EBITDA (Axelson et al., 2013; Gurung and Lerner, 2008) indicating a yield of 10% to 12.5% (the reciprocals of 10 and 8). Considering that my study distinctively focuses on the financing cost of debt in LBO financing at the marketing stage (see Figure 2.2), I use the yield of issued debt securities as a measure of financing cost. Given that each LBO transaction is financed by a number of debts, each debt security consists of several seniority tranches (a combination of junior/senior and subordinate/secured or unsecured) (see Figure 4.2), the yields of LBO loans differ from tranche to tranche. In practice, financial advisors such as Moody's and Standard and Poor apply the weighted offering yield (*WOY*) to measure the financing cost of the debt portfolio. The WOY is expressed as follows:

$$WOY_j = \sum_{i=1}^{n} offering\ yield_{i,j} \times weight_{i,j} \tag{3.1}$$

Where the $offering\ yield_{i,j}$ is the yield that issuer offered to the fund providers for each security i issued in transaction j, the $weight_{i,j}$ represents the issue amount of that specific debt i as a proportion of the total issuance volume consisting of n debts in transaction j. I also consider another measure of LBO financing cost, the weighted yield spread (*WAS*), which is the spread of a bond over the on-the-run government benchmark (Geske, 1977). The *WAS* is used to verify the robustness of regression results from the total yield.

Regarding VC financing, the study will not consider multistage, portfolio-level measures such as IRR or PME but, instead, measures the financing cost using the enterprise multiple because the study focuses on deal-level observations. The return of a PE fund (the flip side of the fund return is the cost to the investee) relies on self-reported data that can be obtained from dominant commercial databases such as VentureXpert, Venture Economics or the database partner of the National Venture Capital Association such as Venture Economics (Cumming and Zambelli, 2013; Harris et al., 2014; Kaplan and Schoar, 2005). Although these databases allow for larger and broader samples, researchers have expressed concern that these data are subject to self-reporting bias (Heughebaert and Manigart, 2012). Given the long locked-in and illiquid nature of PE financing, cash flow data by quarter frequency also raises an appraisal bias. Further, because the integrity of the data in this field is very important, the researcher is obliged to keep strict confidentiality of the raw data (Cumming et al., 2004; Cumming, 2008; Robinson and Sensoy, 2013). The confidentiality of PE business precludes researchers from verifying existing findings. Finally, the measurements above are the aggregated returns of all portfolio firms of a PE fund. From the perspective of a fund unitholder, such a measurement is of return-assessment value. However, for other VC fund providers, such as individual angel investors or existing shareholders, financing is a single-

stage, one-to-one transaction, where multistage, portfolio-level return measurements are not applicable.

Like P/E and P/B are pricing multiples for public equity, EV/EBITDA or EV/TA (total assets) are commonly applied in private equity pricing, especially in LBO transactions (Axelson et al. 2013; Gurung and Lerner 2008). Stromberg et al. (2011) point out that such an enterprise multiple has been proposed and developed in a growing number of datasets. This study applies them as the main measure of financing cost in the VC samples.

The enterprise multiple indicates the premium general partners of PE funds/firms are willing to pay to the target firms (Axelson et al., 2013; Heughebaert and Manigart, 2012). The enterprise multiple (equation 3.2) used in this study is the enterprise value divided by the revenue or book value of the target firm. Zephyr provides a variety of enterprise multiples that includes enterprise value as a multiple of EBITDA, TA and operating revenue turnover.

$$\textit{Enterprise multiple} = \textit{total value of the enterprise / EBITDA} \qquad (3.2a)$$

I apply the Modigliani and Miller (1958) theory of investment and the Gordon (1962) theory of stock price in the public market. I see the price offered by investors reflects investors' outlook of an enterprise's future profit. Inversely, the reciprocal of price times the investees' earnings is the cost for enterprises that search for external equity financing. Therefore, I use the *reciprocal* of the enterprise multiples of EV/EBITDA *before* the completion of VC financing[20] as a measure of the financing cost of enterprises.

[20] *Pre-deal* multiples are multiples created using the *enterprise value* and company financials of the latest available year *before* the deal. The *post-deal* multiples relate to the *same* enterprise value created using the financials of the enterprise in the year the deal took place.

$$\left(\frac{EV_{i,t}}{EBITDA_{i,t}}\right)^{-1} = \left(\frac{Enterprise\_value_i}{EBITDA_{i,t}}\right)^{-1} \quad (3.2b)$$

In most cases, the GP acquires only a small proportion of the target firm's shares. To provide a greater possible number of options, Zephyr solves the total value of the target company by the paid-in capital and the number of the acquired shares. The total value of the enterprise is formed assuming 100% of its shares have been acquired and can, in some circumstances, be the same value as the paid-in capital (if the general partner invests 100% of the target enterprise). Besides $\left(\frac{\mathbf{EV}}{\mathbf{EBITDA}}\right)^{-1}$, another multiple, $\left(\frac{\mathbf{EV}}{\mathbf{Revenue}}\right)^{-1}$, will be used in robustness tests.

Table 3.1 The Correlations of Fund Performance Measures

	IRRVE	IRRCF	PME	TVPI
IRRVE	1			
IRRCF	0.98	1		
PME	0.88	0.88	1	
TVPI	0.74	0.75	0.65	1

Note: IRRVE is based on realised IRR of funds started in each period as reported by Venture Economics; PME observations are obtained from the S&P 500 during the same period.
Source: Kaplan and Schoar (2005).

3.1.2 Implicit financing costs

In the context of PE financing, the added-value is directly related to the return from the entrepreneur's project. When netting the pure financing cost to gain the measure of net return, one should consider implicit trading costs. In this study, I define the implicit financing cost as an intermediary service fee.

The complexity and ambiguity of PE financing tools evoke a myriad of financial/legal risks, which is one of the critical due diligence concerns of any participant in the transactions. PE managers are perceived as the most sophisticated investors given their wealth of experience in finance and law; they play a role of buy-side advisor for LPs (the holders of PE fund units)

in the financing and follow-up stages (Cumming, and Walz, 2010; Kaplan and Schoar, 2005). The financial/legal services provided by PEs can greatly smooth the transactions by applying their in-depth understanding of the respective rights and obligations in specific contracts (e.g., some contracts require complex bilateral settlements or multiple credit exposure) (Bortuzzo et al., 2004). An ideal legal advisor group also helps to keep up with the progression of the law as compliance requirements evolve.

Chan (1983) argues that the fee paid to professional advisors (see service fee (*d*) in section 2.4.2) in PE financing is an important component of the financing costs. Unfortunately, the record of intermediary service fees is not subject to the mandatory disclosure requirement. The commercial databases CapitalIQ and Zephyr provide substitute observations of the number of legal and financial advisors involved in a single PE-backed transaction, which can serve as a proxy for intermediaries' service fees. The definitions of a financial advisor and legal advisor are as follows:

1) Financial advisor: Specific advisors who help clients gain access to PE financing and provide fair opinions and other financing solutions to assist clients in their transactions. Typically, an investment bank provides advice to its clients related to the planning and arrangement of their financial affairs.

2) Legal advisor: A law firm that provides advice on PE matters, government regulations, litigation, anti-trust legislation and structured finance. A legal advisor can represent bidders, targets, financial advisors, merchant bankers and other parties in an LBO deal.

Although there is no record of how much each advisor group charges for its service, it is reasonable to expect the larger the advisor group, the more the target firm must pay for PE financing.

3.2. Institutional Environment

3.2.1 Formal institutions

A series of regulations can be applied to test the development and structure of the capital market where PE financing takes place. Contrary to the quantity variables such as GDP, measurement of the constituent variables of the institutional environment is difficult (Benham and Benham, 2001); most need to be quantified or be mathematically transformed[21]. A meaningful index, in principle, should be constant and accurate. However, it is likely that legal experts reviewing the same laws have difficulty reaching a consensus. Other issues concerning a reliable index's design include the selection of indicators and aggregation methods (Nardo et al., 2005). Assessing the index quality is beyond the scope of this study.

The most influential empirical work examining the effect of securities on the capital market (La Porta et al., 2006) developed an index system based on the key dimensions of laws and regulations at the national level. The key dimensions of regulatory systems cover areas such as company law and bankruptcy or insolvency law, and the public and private enforcement of those laws. In a recent study of PE financing in Europe, the index of the legal and tax environment was used to proxy the "private equity environment" (Gurung and Lerner, 2008).

As discussed in section 2.4.2, the issuance of innovative financing tools in PE transactions, such as CDS, and ABSs in LBO transactions, or convertible debt and a Valuation Adjustment Mechanism (VAM) in VC deals, contain contingent rights or obligations. The contingent rights or obligations provide options for fund providers when certain events occur. Because

[21] The OECD handbook suggests a 10-step guide to building a composite index (or indicator): data selection, imputation of missing data, multivariate analysis, normalisation, weighting and aggregation, robustness and sensitivity analysis, back to the detail, links to other indicators, and visualisation of the results (Nardo et al., 2005).

the possible options add uncertainty to the financing cost, the extent to which the legal system is capable of enforcing contracts or keeping the unforeseen liability under control is expected to determine the overall financing cost (as measured by a variety means of paid-in capital, issuance, success, spread, etc.). This study quantifies the laws and regulations related to PE financing such as creditor and shareholder rights. The former presumably shape the financing cost of highly leveraged LBO transactions whereas the latter largely determine the cost of equity when financing with VC.

3.2.1.1 Laws and regulations

1. Creditor rights

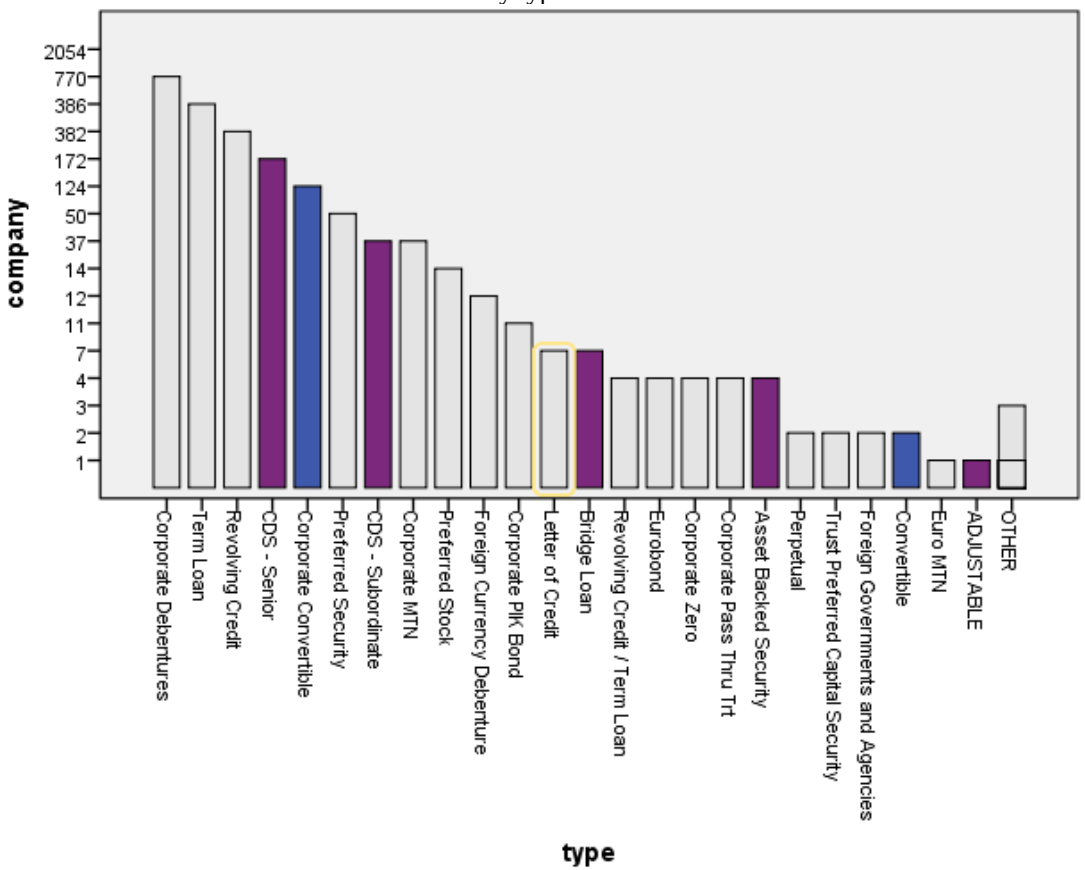
One common characteristic of an LBO is the extensive use of leverage. Hence, the LBO sponsors are exposed to insolvency risk especially during economic downturns. Gurung and Lerner (2010) show that around 6% of all LBOs end in bankruptcy or financial restructuring. This implies a higher failure rate than in US publicly traded firms. It is widely acknowledged that credit risk remains low under an institutional environment where creditors can easily force repayment, while debtors do not have an auto-stay on the assets (Cao, 2015; Fabozzi and Vink,2012), and debtors are more willing to offer favourable credit terms (Townsend, 1979). When assessing the financing cost, one should consider the formal institution of creditor rights since it is an essential determinant of financing cost (Balcaen et al., 2011; Fabozzi and Vink, 2012).

This study applies the index of creditor rights from Djankov et al. (2007) to examine how much a creditor's rights determine the financing costs in LBO transactions. The credit right index was first introduced by La Porta et al. (1997) and Djankov et al. (2007). It has been widely accepted as a benchmark index to examine creditor rights in bond and loan markets.

The index is an aggregated value of the following four aspects of the rights of secured lenders: 1) an automatic stay on assets; 2) secured creditors paid first; 3) restrictions on going into reorganisation; and 4) management does not stay in a reorganisation (La Porta et al., 1998). Within each country, the examined dimension is scored as one if it is legal. The higher the aggregated score, the higher the creditor rights in that country.

It is worth mentioning that some LBO financing deals are of an equity nature with 19 issuances of preferred stock, and 124 issuances of convertible debts among a total of 2,093 (see Figure 3.1). Given the small proportion of equity-like securities, this study does not consider the shareholder rights index when examining LBO transactions

a. Security types of LBOs



b.Security tranches of LBOs

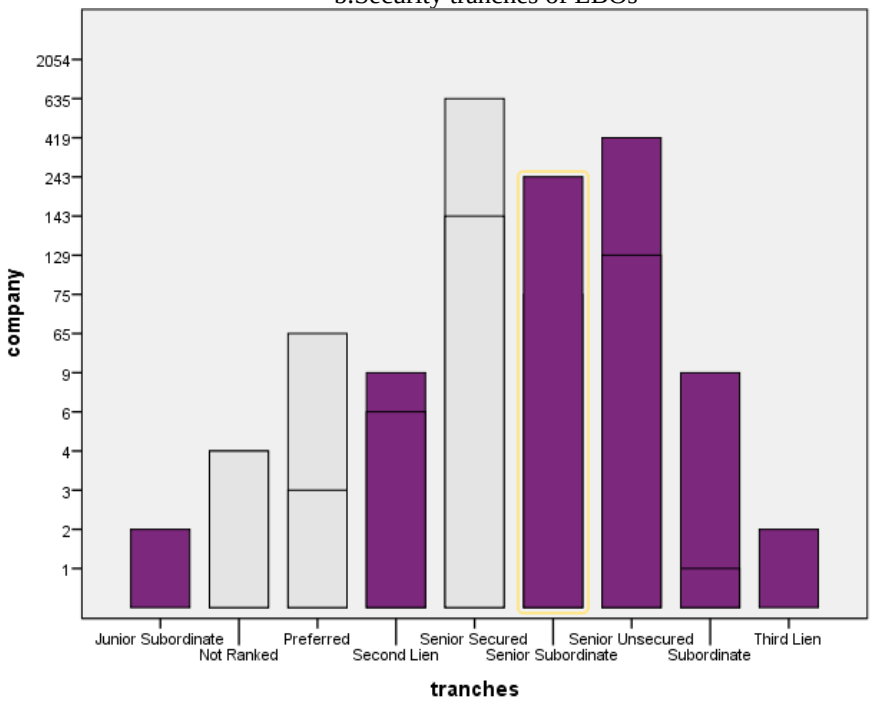


Figure 3.1 Financing Securities in LBO Transactions

Note: In the left of Figure 3.1, the purple bars represent innovative financing securities, the blue bars represent equity-like securities. In the right of Figure 3.1, the purple bars represent unsecured /subordinated tranches.
Source: CapitalIQ

2. Shareholder rights.

The most-cited aggregate index system that evaluates shareholder rights is the anti-director rights index of La Porta et al. (1998). The anti-director rights index examines an exhaustive bundle of shareholder rights: voting rights (share-vote pair), voting the proxy, share blocking, cumulative voting, oppressed minorities mechanism, pre-emptive rights, and capital to call.

This study applies the newly issued survey of shareholder rights from CFAI (2013). This survey covers a narrower sample of 28 markets as opposed to 49 markets in La Porta et al. (1998). However, it extends the sample to emerging markets including Russia, Poland and China, which are not covered in La Porta et al. (1998). This study composes the shareholder rights index manually based on this newly-issued survey with sub-index and the method presented in Table 3.2. Unlike most studies using the aggregated score system of La Porta et al. (1998, 2006), this study uses the sub-index as explanatory variables and interprets them one by one, because shareholder rights embrace a bundle of rights with certain rights affecting certain sectors to varying degrees.

Table 3.2 Shareholder Rights Scoring Systems

Laws	Sub-Index
1. Control Limitation	
Are there share ownership limitations in this market?	Equals six, five, four, three, two and one if the answer is "yes", "yes, usually", "yes, sometimes/sometimes", "no, mostly", "no, usually", "no".
2. Voting Rights	The score of proxy voting right equals the arithmetic mean of scores 1) and 2).
1) Are there (other) common restrictions on the proxy vote?	Equals five, four, three, two and one if the answer is "yes", "yes, sometimes/sometimes", "yes, somewhat", "no, mostly", "no, usually", and "no".
2) Are there (other) common restrictions on the rights of shareowners to vote in person or by proxy?	Equals five, four, three, two and one if the answer is "no", "no, mostly", "yes somewhat/somewhat", "Yes sometimes", "yes".
3. Class Action / Derivative Suit	The score of class action equals the arithmetic mean of scores 1) and 2).
1) Shareholders who represent at least 5%-10% of the total number of voting rights of the company the right to bring a derivative suit against directors or executives on behalf of the company.	Equals three, two and one if the answer is "yes", "yes but very uncommon/not unheard of", is "uncommon/allowed but rarely used", and "no".
2) The lawsuit filed on behalf of a group of shareholders who share the same complaint. Shareholders in such cases are usually represented by the same lawyer or group of lawyers.	Equals four, three, two and one if the answer is "yes", "yes, but only under certain conditions", "no, mostly", and "no".
Bylaws	**Sub-Index**
4. Voting Policy	The score of voting policy equals the arithmetic mean of scores 1), 2) and 3).
1) Must shares be deposited or blocked from trading in order to vote?	Equals five, four, three, two and one if the answer is "no", "rarely", "no, mostly", "yes, sometimes/sometimes", and "yes".
2) Do companies adhere to a majority voting standard in the election of board members?	Equals five, four, three, two and one if the answer is "yes", "yes, mostly", "sometimes; yes, but adherence is company specific; varies", "no, usually", and "no".
3) Do companies allow cumulative voting in the election of board members?	Equals five, four, three, two and one if the answer is "yes", "sometimes", "no, mostly", "rarely "and "no".
5. Oppressed Minorities Mechanism	The score of oppressed minorities mechanism equals the arithmetic mean of scores 1), 2), 3) and 4).
1) Are shareholders able to affect a company's remuneration policy through shareholder approval?	Equals five, four, three, two and one if the answer is "yes", "yes, sometimes/sometimes", "no, mostly", "rarely "and "no".
2) Are shareholders able to affect the remuneration policy through binding shareholder approval?	Equals five, four, three, two and one if the answer is "yes", "yes, usually", "yes, mostly/mostly", "sometimes", and "no".
3) Are shareholders permitted to introduce dissident resolutions?	Equals four, three, two and one if the answer is "yes", "sometimes", "no, usually", and "no".
4) Do shareholders have a right to convene a general meeting of shareholders outside the annual meeting process?	Equals four, three, two and one if the answer is "yes", "yes, usually", "yes, but only under certain condition", and "in some cases".

Source: CFAI (2013)

Note: The law or bylaw is given a higher score if it is minority-friendly.

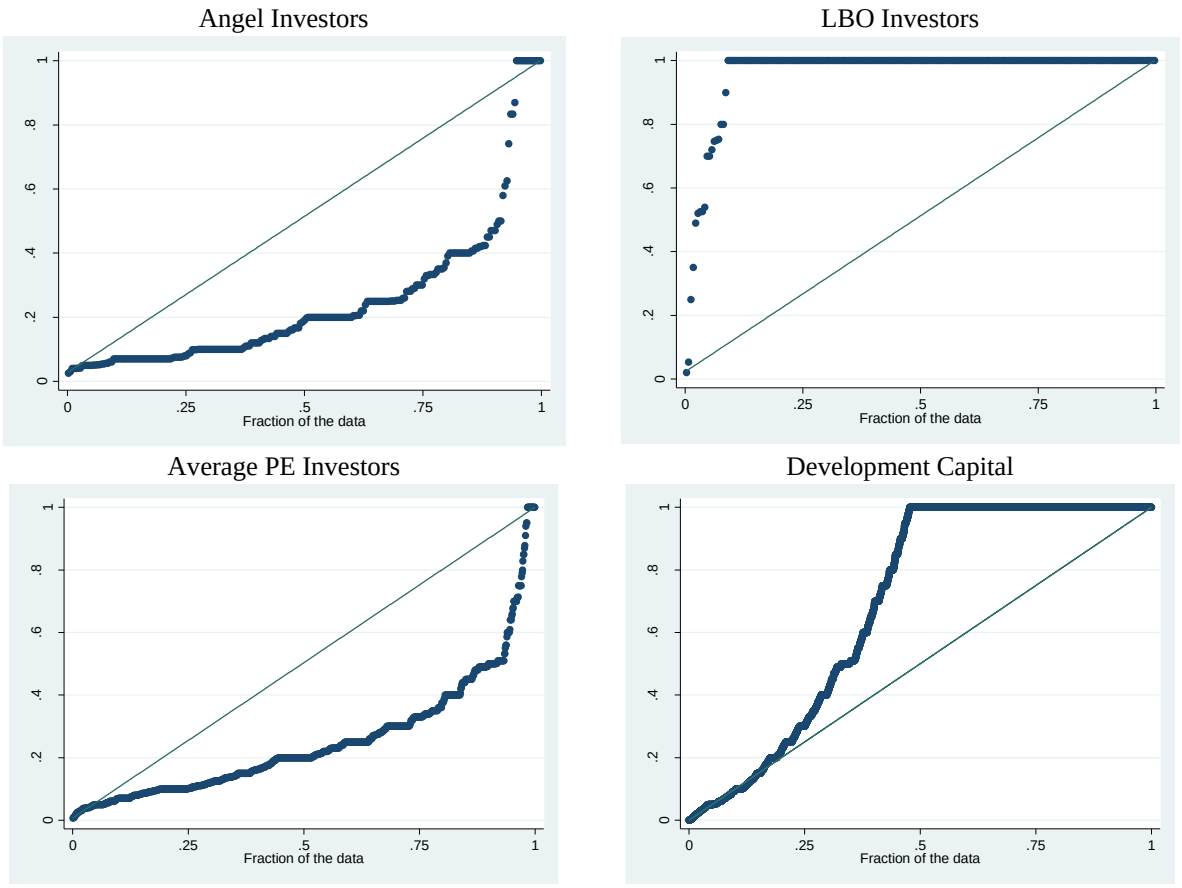


Figure 3.2 The Quartile Ranking of Ownership Level Grouped by Financing Type

Source: Zephyr

A close focus on the minority-friendly nature of shareholder rights is important given that VC providers usually hold a small proportion of target companies (Bruton et al., 2005). Figure 3.2 illustrates a quartile ranking of ownership among different PE fund providers. The statistic shows that most VC fund providers, compared with average PE fund providers, are mostly minority shareholders. Table 3.2 shows the applied survey examines a comprehensive bundle of shareholder rights that highly-overlap with those in La Porta et al. (1998). It also examines other minority-friendly dimensions in the bundle of shareholder rights: control limit, action suits, and derivative suits.

Another advantage of this survey is that it provides detailed information on proxy voting restrictions. Voting rights are almost always significant in affecting investors' valuation of

target firms (La Porta et al., 1997). However, it is uniquely significant in PE financing, because the shares acquired by PEs (‘*1-p’* in a random set of *(p, q)*) are jointly owned shares whose beneficiaries cast their voting rights through proxy voting. The proxy voting arrangement is prevalent in private placement memoranda at the fund-raising stage. On the empirical front, shares from LPs are consolidated into a voting block through a trust or the holding company of a PE firm. Having the deposit of proxies concerning beneficiaries’ voting rights, LPs could retain a certain level of discretion over important issues for investees, such as appointing an executive and overseeing implementation of the strategy. If not, no voting powers of the trust are allocated to the LPs (Deangelo and Deangelo, 1985), in my case, the PE fund-providers. Voting rights ensure a predictable alignment of cash flow or profit from investees thus encouraging the LPs to write bigger cheques to GPs who may offer higher enterprise multiples thereby lowering the financing cost from the enterprise side. This study also considers the shareholder rights of voting policy and oppressed minority mechanisms, which are generally “unrestricted” by local company law or left as uncovered in case “otherwise stated in the company deed”. By this definition, they are not formal state-mandated rules but bylaws (CFAI, 2013). Like previous studies by La Porta et al. (1998) and Spamann (2010), I treat both state-mandated laws and bylaws as formal institutions.

This study suggests that the legal environment of a country could facilitate PE financing by reducing explicit and implicit financing costs. The following relationships are hypothesised:

H1a: *LBO financing enjoys lower weighted average yield and lower advisory fees in countries with higher creditor rights standards.*

H1b: *VC financing enjoys lower enterprise multiple and lower advisory fees in countries with higher shareholders right standards.*

3.2.1.2 Law enforcement

The basic principle of financial law is the direct reduction in the costs of private contracting (La Porta et al., 2006). Unlike standardised financing contracts such as loan agreements or IPO prospectuses, PE financing contracts are tailor-made. This is especially true in VC financing. Reliable information on the bidding price or the acquired stake is very scarce and can be detected only in a highly incomplete manner from compulsory disclosures such as M&A (mergers and acquisitions) announcements or IPO prospectuses from the stock exchange. Filing information on PE financing is very time-consuming and usually requires access to professional terminals (e.g., Bloomberg, Reuters), thus worsening the asymmetric information problem in this market.

To explore how law enforcement contributes to information transparency in the PE market and further reduces the financing costs, the following relationships are hypothesised:

H2a: *Law enforcement reduces LBO financing costs (weighted average yield) and advisory fees.*

H2b: *Law enforcement reduces VC financing costs (reciprocal of enterprise multiple) and advisory fees.*

In each country, there is a jurisdiction procedure to enforce creditor rights, e.g., the Chapter 11 reorganisation procedure in the US and the administrative receivership procedures aimed at the liquidation of the debtor's business in the UK (Couwenberg, 2001). Judicial enforcement in each country has a different socially optimal preference. For a cross-country study of creditor rights enforcement, the most cited indicators are from Djankov et al. (2007) and La Porta et al. (1998) where the insolvency litigation procedure is categorised into three

classes: foreclosure, liquidation, and reorganisation. Among them, reorganisation holds a *going-concern* preference whereas the foreclosure and liquidation solutions both hold a *re-possess* preference.

The three distinct jurisdiction procedures warrant separate analysis when we investigate creditor rights in LBO financing. For LBO financing, creditor rights do not work indifferently on all PE fund sponsors as they do on creditors in other financing deals. In an LBO deal, creditor rights work in favour of LPs rather than GPs. The GPs, labelled as a distressed asset investment firm, view themselves as the legitimate owner of the companies thus having an incentive to work with the distressed firms to bring about an orderly and timely restructure (Cumming and Fleming, 2015). In a GP-LP partnership, the GP controls the pool of PE capital. It is fair to say that LBO financing is more about debtor-in-possession financing rather than debtor-in-repossession financing. Moreover, compared with credit rights in other financings, those claimed in LBO deals are more complex because LBO transactions are financed by innovative securities such as CDS and ABS. These structured financing tools involve multiple creditors with different seniority levels that are ensured by an absolute priority rule. Whereas the absolute priority rule holds in liquidations, it has not always been upheld by the courts in reorganisations (Kim, 2016; Miller and Reisel, 2011).

I use three dummy variables for the following types of enforcement of debt: foreclosure, liquidation, and reorganisation. Among them, foreclosure aims at recovering money owed by secured creditors without the involvement of the court; liquidation means winding up a company under court supervision; and reorganisation rehabilitates companies through a court-supervised procedure. For countries where creditor rights are higher, the resolution of creditors' rights favours creditors and not the target company's managers or other unsecured

creditors, especially in a reorganisation. The advantage of these measures is that they capture both laws on-the-books and the efficiency of debt contract enforcement (Djankov et al., 2008).

With regard to the law enforcement test based on the VC sample, I use the law enforcement index from La Porta et al. (1998). According to La Porta et al. (1998), law enforcement can be categorised as public enforcement and private enforcement. Public enforcement by independent, third-party entities (e.g., government executive branches, stock exchanges) can regulate markets through subpoena, discovery or other means such as imposing sanctions (Landis, 1938; Seligman, 1995). Private enforcement includes disclosure requirements and liability rules that make it cheaper for investors to recover damages when information has been wrong or was omitted.

Unlike the compulsory disclosure and liability rules that are regulated through independent parties such as the stock exchange, the monitoring and support of PE financing relies on contracts, i.e., the allocation of a bundle of shareholder rights (e.g., cash flow and control rights), between the entrepreneur and the PE fund providers. Such incentive arrangements embedded in financing contracts lack private enforcement, which is driven by the honesty of the issuers/sellers (La Porta et al., 2006). In such circumstances, financing contracts are subject to the supervision of public enforcement. It is necessary to assume that countries, where public enforcement is high, are expected to explicitly describe the various parties, thereby reducing the financing cost. The following relationship is hypothesised:

H3: *Public enforcement dominates private enforcement in reducing financing costs in VC and LBO transactions.*

To measure enforcement of the law, I apply two main indexes to represent public enforcement: A Private Enforcement Index and a Public Enforcement Index (La Porta et al., 2006) in both the VC and LBO samples.

3.2.2 Informal institutions

Legal rules cannot respond to market development; they only provide "fundamental tools" for addressing social concerns (La Porta et al. 2008). The existing legal index, focusing on formal financing activities, provides little information about informal workouts (Gilson et al., 1990). An acknowledged weakness of studies in this area is that they are almost entirely based on cross-sectional data because of the non-availability of comparative time series (Armour et al., 2009). There are many ways to address the potential drawbacks of the existing legal index. For example, Armour et al. (2009) added critical issues to the process of gathering and aggregating legal data. This study examines informal institutions in the form of PE industry norms and considers them additional factors. Informal institutional factors regarding the social network or reputational bonding are available but have not been applied in this field of study. Although most of these indexes can be challenged as "Formalism" (Djankov et al., 2003, 2008, 2010) or lacking a conceptual background[22], they have still been widely used in and help to enlighten the empirical findings.

3.2.2.1 Economic norm

Normality analysis involves hermeneutic, or interpretative, judgements; thus it is inevitable that opinions may differ over particular provisions (Amour et al., 2009). To address this issue, I examine the handbook of best practice from the PE associations of both the US and

[22] The Formalism index for each examined topic is just the weighted sum of its sub-index.

the UK and use the extensive dataset that covers 38,293 PE funding cases to provide behavioural explanations for the selected factors.

Table 3.3 A Summary of Target and Acquirer Country of PE Financing to August 2015

Target country				Acquirer country			
Country	**Number of Deal**	**Per cent**	**Cum.**	**Code**	**Number of Deal**	**Per cent**	**Cum.**
Total	39,731	100.00		Total	51,573	100	
US	5,551	13.97	13.97%	US	11,966	23.2	23.20%
FR	5,447	13.71	27.68%	FR	7,888	15.29	38.49%
GB	4,736	11.92	39.60%	GB	5,994	11.62	50.11%
ES	2,322	5.84	45.44%	CN	2,544	4.93	55.04%
CN	2,029	5.11	50.55%	ES	2,414	4.68	59.72%

Note: The first column represents country names in the ISO Alpha-2 code.
Source: Zephyr.

Table 3.3 shows that over 40% of PE deals took place in or were initiated from the US, France and the UK. These latest numbers support statements in other studies that note that the practices of the PE industry were invented, tested and found appropriate in the US and then exported to other parts of the world such as the EU and Asia (Manigart et al., 2009; Sorenson and Stuart, 2001). Table 3.4 shows that the top 10 PE players (measured by deal numbers) made 602 transactions of 1,555 recorded deals, with an HHI index of 38.71%.

Table 3.4 The Market Share of the Top 10 PE Firms to August 2015

Acquirers	**Obs**	**Mean**	**Sum**	**Market share**	
Industry Total	1555*	146,652.21	228,044,189.21	**In deal**	**In value**
3i Group PLC	122	45,839.83	5,592,459.48	7.85%	2.45%
Industrifonden AB	86	5,217.22	448,680.83	5.53%	0.20%
Business Growth Fund PLC	66	7,006.00	462,396.00	4.24%	0.20%
Accel Management Company LLC	54	29,414.19	1,588,366.31	3.47%	0.70%
Carlyle Group P	50	139,236.54	6,961,826.94	3.22%	3.05%
Gimv NV	49	18,047.35	884,320.23	3.15%	0.39%
Auriga Partners	46	8,808.26	405,179.77	2.96%	0.18%
Kleiner Perkins Caufield & Byers	44	40,415.06	1,778,262.45	2.83%	0.78%
European Bank for Reconstruction and Development	43	26,602.26	1,143,897.31	2.77%	0.50%
Turenne Capital Partenaires SA	42	2,120.50	89,061.00	2.70%	0.04%

Note: * Deal number is the summary of the number of deals with valid valuation information.
Source: Zephyr.

This study argues that the business practices of PE firms from the US and the UK represent most, if not all, the industry norms. Therefore, borrowing from previous studies that covered PE norms from the US and the UK, the proposed informal institutions in this study are as follows:

1. Shareholder primacy norm

VCs are presumably in charge of improving the corporate governance of target firms. However, the "dual-class", "multiple-shareholders" nature of VC-backed firms gives birth to principal-agency problems. There is a combination of managerial tools that VCs use to minimise agency risk. The most widely used tools are financing contracts and provisions. In addition to formal contracts, the level of VCs' commitment also contributes to minimising agency problems thus maximising the shareholders' interests. One widely recognised method for testing whether VCs are working in the shareholders' interests is recording how much time they devote to the sponsored firms through a survey (Heughebaert and Manigart, 2012). The VC managers' time is a valuable commodity that is invested only as necessary to add economic value (Gifford, 1997). Time spent with investees is considered as a cognitive institution on the status of the entrepreneur. The higher the status of the entrepreneur, the more the VC managers desire to be associated with the entrepreneur. Conversely, VC managers in low-status countries would expect not to value spending time with the entrepreneur. Studies suggest that VC managers' time spent with the CEOs of portfolio companies will, in turn, contribute to the VC firm's financial performance, given that the performance is maximised by the efficient use of the VC manager's time (Bruton et al., 2005; Heughebaert and Manigart, 2012).

Different from existing studies that examine the correlation between time and the subsequent productivity of VC-backed firms, I examine how the time VCs devote to target firms contributes to financing cost. Based on available data, this study uses analyst coverage as a proxy for "time" that VC managers invest in each transaction to explore the shareholder primacy norm. Borrowing an idea from studies on cross-country equity financing (Burns et al., 2007; Chang et al., 2013), I use a dummy variable equal to one if the transaction information is released through analyst submission and media scrutiny and zero otherwise.

Because LBO managers cannot be regarded as principals, few studies have addressed the shareholders' primacy norm in LBO deals. However, as discussed in Chapter two, as a general principle, LBO managers make important decisions. One important decision is optimising investees' capital structure using leverage. This study anticipates that the issuance of innovative debt securities is more demanding for LBO-backed cases. Innovative debt securities mainly take the form of structured debts (see Figure 3.1) with PE managers purchasing the unsecured debts. I compute the total number of unsecured debts using the number of senior subordinate, junior subordinate, and subordinate securities[23]. I also calculate the total number of structured securities by summing the total issuance of convertible debts, preferred stocks, CDS and ABS in each LBO transaction. I assume more issuing of structured securities represents more time that PE managers have devoted to each financing transaction. Thus the following relationship is hypothesised:

[23] According to Basel III, we define a senior unsecured tranche as "secured" because all senior claims enjoy a claimant priority as high as that of bank loans (see Figure 3.3).

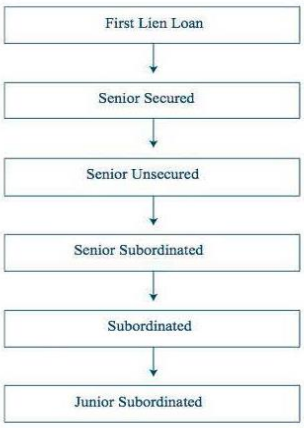


Figure 3.3 The Tranches of Typically Structured Debt Securities

H4a: *In LBO financing, there is a negative correlation between the innovative financing tools and the weighted average yield and intermediary fees.*

H4b: *In VC financing, there is a negative correlation between analyst coverage and financing cost (reciprocal of enterprise multiple) and intermediary fees.*

2. Social ties

The network approach argues that PE managers have a central network position between otherwise unconnected actors (e.g., investors, entrepreneurs) in the capital market (Blyler and Coff, 2003; Judge et al., 2011). The State Small Business Credit Initiative (SSBCI, 2014) in its best practice handbook also emphasises the importance to "establish professional management and professional networks". Social ties translate into increased power in two main ways: they grant stakeholders access to strategic information (Burt, 2009); and they are based more on personal relationships than formal authority. In principle, the value of the PE professional lies in market knowledge and contacts with a broad range of potentially interested buyers and sellers, thereby decreasing the search cost as well as the wait time for the investors (Heughebaert and Manigart, 2012). PE professionals may also better facilitate PE financing by enforcing contracts or sanction violators (Perkins, 2000). In LBO financing,

it is plausible that PE sponsors are uniquely positioned to arbitrage debt markets versus equity markets because of superior access to debt financing (Ivashina and Kovner, 2011). VC professionals are like what Blyler and Coff (2003) defined as "rainmakers" and "social capital-rich individuals". Based on the social network approach, the following relationship is hypothesised:

H5a: *LBO managers with larger social networks offer a lower weighted average yield but charge higher intermediary fees.*

PE firms' social ties, at the organisational level, are likely to be embedded in multiple dimensions of a firm's organisational structure. It is reasonable to expect PE managers with larger professional groups, larger asset size, and social capital-rich founders/owners have better social connections to potential sellers and buyers. Since I obtain the study samples from two different databases, I measure the social ties of PE managers in LBOs and VCs differently. The social ties of LBO managers are measured by the number of registered professionals and the number of prior and current investments in CapitalIQ. The social ties of VC managers are defined by the business type of the ultimate owner of the VC managers. I use a dummy variable to capture three distinct types of VC firms: financial-institutions-backed, government-affiliated, and individual VCs.

Our categorisation of VCs' social ties is taken from Heughebaert and Manigart's (2012) study. They observe that VCs' norms are from four distinct groups: independent VC firms, bank VC firms, captive VC firms, and government VC firms. The authors find that bank VC firms seek to establish lending activities and invest in larger investment rounds. Captive VC

and independent VC firms pick up investees from a different pool, the former are more competitive bidders than the latter.

A competitive bidder in VC deals usually offers higher enterprise multiples (lower financing cost from the target firm's perspective), and I expect social ties with a bank or bank equivalent institutions (financial institutions) helps to reduce VC financing costs. The relationship is hypothesised as:

H5b: *VC managers' affiliation with financial institutions offers a higher VC enterprise multiple and charges lower intermediary fees.*

3. Age

PE managers are repetitive players in the capital market where reputation enhances economies of information production and mitigates the risk of opportunistic behaviour by either party. This generates a high-level reliability in favourable terms of credit (Stromberg et al., 2011), total capital in LBOs (Barry et al., 1990), and a buyout alpha benchmarked to a market index (e.g., MSCI, Russell 2000/3000, S&P 500) (Harris et al., 2014) of identical risk.

Institutional studies suggest two types of financing efficiency can be determined by the age of a financial intermediary. The first is maximising the deal value because the PE manager who has worked longer in the industry has more experience in monitoring the executives of an investee company (Blyler and Coff, 2003). The second is the possible service cost resulting from the "reputation capital" (Krishnan, 2011) or "name recognition" (Gompers, 1995) or "bargaining power" of PE managers (Heughebaert and Manigart, 2012). Thus, I expect PEs with seniority could offer better financing conditions but charge higher intermediary fees for

the potential rewards they bring to the invested companies. I define the age of PE firms as their business years at the completion date of the deal. The following relationships are hypothesised:

H6a: *Older PEs help reduce the LBO weighted offering yield but charge higher intermediary fees.*

H6b: *Older PEs help reduce the VC financing cost (reciprocal of enterprise multiple) but charge higher intermediary fees*

Finally, to test the core hypothesis of this study, I weigh the contribution of informal institutions against that of formal institutions. Informal institutions matter because the causal sequence in the rise of political and economic institutions both in the West and some representative Eastern countries (e.g., China) show that the norm often precedes laws and that only after a private enterprise economy is well established did the state begin to enact formal rules (Nee and Opper, 2012). Globally, the inception of securities markets does not usually precede or is even accompanied by formal state-mandated rules[24] (Nee and Opper, 2012). In a sector where legal coverage is scarce and is still evolving, norms determine the majority, if not all, interactions of PE managers in the business environment. Even outside the PE circle, the broad scope of the financing sector is ruled, to a certain extent, by norms. Armour et al. (2009) suggest that there are self-regulatory codes and other norms with a status that makes them the functional equivalent of "hard" laws.

[24] Company stocks were traded informally and transactions were treated as gentlemen's agreements, often conducted in local coffee houses or open market places (Nee and Opper, 2012).

In a PE market where the legal system is inferior or unreliable, I suggest economic activities are facilitated by some informal norm beyond the shadow of the law. Thus, with the following hypothesis, I explore whether informal norms at the professional level outweigh official norms at the country level:

H7: *Informal norms play a more important role in reducing the financing cost in both LBO and VC transactions.*

3.2.2.2 Statistical economic norms

Table 3.5 summarises existing studies related to economy norms that shape the behaviour of market participants. The literature in economic norms obtains observations supported by the research network of PE professionals. Advisors or academics who collect primary data on PE professionals usually have no incentive to reveal this information to the public. One advantage of the survey method is based on the straightforward idea that it is a direct way to uncover a person's behaviour. Such studies have presented a clear picture of local PE practices (Bruton et al., 2005; Manigart et al., 2009) that are intuitive and likely to be further examined in other market conditions when possible. In a cross-country laboratory study, it is not feasible to collect reliable primary data through a survey without any support of professional associations. Thanks to the work of a commercial database (Capital IQ) and the World Economic Forum, examination of economic norms has been increasing since 1999 (Gurung and Lerner, 2010).

Table 3.5 Proxies of Economy Norms in PE financing

Contractual structure (Bruton et al., 2005; Manigart et al. 2009)	Funding-raising (Kaplan and Stromberg, 2001; Cumming, 2008)	Exit (Cumming and MacIntosh, 2006)	Funding stage (Cumming and Johan, 2009)
Corporate board seats	Common equity	IPO	Formative stage: angel investing, seed-stage, early stage
Non-compete clause	Preferred equity	MBO	Later-stage
Preferred dividends and liquidation preference	Convertible debt	Secondary market	Mezzanine-stage
Reserved matters	-	Liquidation	-
Earn-outs	-	-	-

Table 3.6 summarise the hypotheses of this study. The research design with the empirical model and variable construction will be discussed in the next section.

Table 3.6 A Summary of the Study's Hypotheses

	Hypotheses
H1a	LBO financing enjoys a lower weighted average yield and intermediary fees in countries with higher creditor rights standards.
H1b	VC financing enjoys lower enterprise multiple and intermediary fees in countries with higher shareholder rights standards.
H2a	Law enforcement reduces the LBO weighted average yield and intermediary fees.
H2b	Law enforcement reduces VC financing costs (reciprocal of enterprise multiple) and intermediary fees.
H3	Public enforcement dominates private enforcement in reducing financing costs in VC-backed transactions.
H4a	In LBO financing, there is a negative correlation between innovative financing tools and weighted average yield and intermediary fees.
H4b	In VC financing, there is a negative correlation between analyst coverage and financing cost (reciprocal of enterprise multiple) and intermediary fees.
H5a	LBO managers with larger social network offer lower weighted average yield but charge higher intermediary fees.
H5b	VC managers' affiliations with financial institutions offer a higher VC enterprise multiple and charge lower intermediary fees.
H6a	Older PEs help reduce the LBO financing (weighted average yield) but charge higher intermediary fees.
H6b	Older PEs help reduce the VC financing cost (reciprocal of enterprise multiple) but charge higher intermediary fees.
H7	Informal norm plays a more important role in reducing financing cost in both LBO and VC transactions.

3.3. Research Design and Empirical Testing

Studies regarding institutions (e.g., legal) and their determinants in varying financing behaviours generally apply the mean-test (Cumming and Walz, 2010; Djankov et al., 2007; La Porta et al., 1998). Mean-test is ideal for a dataset whose explanatory variables are grouping dummies. Unlike previous studies, this study applies a legal index as an explanatory variable of formal institutional and original observations of PEs' years of business and a social network as informal institution variables. With such a panel dataset, I can conduct an ordinary least-squares linear regression. Unlike the mean test, which provides only a group comparison, the estimated coefficient from linear regression tells exactly how much institutional environment contributes to financing cost regarding the enterprise multiple and weighted average yields.

Previous studies show concern about the endogeneity issue because PE-enterprise pairs are unlikely to be random samples. For example, the independent variable of transaction volume and number of buyers may be related to the experience of the PE managers and the number of legal and financial advisors. In the VC sample, a large advisory group and more experienced VC managers are more likely to have access to larger target companies and potential buyers. Thus, I use the 2-stage least-squares regression with the instrumental variables (IV) technique (Granger, 1969) to address the endogeneity issue.

3.3.1 Two-stage least squares (2SLS) estimation

3.3.1.1 Statistical model

In the 2SLS model, I regress the comprehensive observations of financing cost detected from both LBO and VC financing against the target formal and informal institutions as follows:

$$Explicit\_Financing\_Costs_{LBO,i} = \alpha_0 + \beta_1 z'_{i,Creditor\_Rights} + \beta_2 z'_{i,Debt-Enforcement} + \beta_3 z'_{i,Informal-Institution} + \beta_4 z'_{i,Market} + \beta_5 z'_{i,Company} + \xi_{i,1} \quad (3.3a)$$

$$Explicit\_Financing\_Costs_{VC,i} = \alpha_0 + \beta_1 z'_{i,Shareholder\_Rights} + \beta_2 z'_{i,Law-Enforcement} + \beta_3 z'_{i,Informal-Institution} + \beta_4 z'_{i,Market} + \beta_5 z'_{i,Company} + \xi_{i,1} \quad (3.3b)$$

$$\text{Im}\,plicit\_Financing\_Costs_{LBO,i} = \alpha_0 + \beta_1 z'_{i,Creditor\_Rights} + \beta_2 z'_{i,Debt-Enforcement} + \beta_3 z'_{i,Informal-Institution} + \beta_4 z'_{i,Market} + \beta_5 z'_{i,Company} + \xi_{i,1} \quad (3.4a)$$

$$\text{Im}\,plicit\_Financing\_Costs_{VC,i} = \alpha_0 + \beta_1 z'_{i,Shareholder\_Rights} + \beta_2 z'_{i,Law-Enforcement} + \beta_3 z'_{i,Informal-Institution} + \beta_4 z'_{i,Market} + \beta_5 z'_{i,Company} + \xi_{i,1} \quad (3.4b)$$

where:

$Explicit\_Financing\_Costs$: includes the LBO weighted offering yield (*WOY*) and the VC enterprise multiple$(\frac{EV}{EBITDA})^{-1}$;

$\text{Im}\,plicit\_Financing\_Costs$: includes the number of financial and legal advisors (*ADVISORS*) involved in each LBO or VC transaction;

$z'_{i,Creditor\_Rights}$: the creditor rights index *(CREDITOR);*

$z'_{i,Shareholder\_Rights}$: the shareholder rights index *(SHAREHOLDER);*

$z'_{i,Law-Enforcement}$: the law enforcement index (*PUBL_ENFORCE*, *PRIV_ENFORCE*);

$z'_{i,Debt-Enforcement}$: the debt enforcement index (*FORECLOSURE, LIQUIDATION, REORGANISATION*);

$z'_{i,Informal-Institution}$: includes the number of unsecured debt securities (dummy variable of analyst coverage, *ANA_COV*) in the LBO (VC) transaction; the number of registered professionals (*PROFESSIONAL*) and total investment/subsidiaries (dummy variables of financial institution affiliation, *SUBSIDIARIES*) of LBO (VC) managers; business type of parent companies of VCs (*BANK*, *GOVT_EDU* and *INDIVIDUAL*) and business years (*AGE*) of the LBO (VC) managers;

$z'_{i,Market}$: includes the credit (equity) market benchmark yield (*MARKET*) of the sample month when LBO (VC) transaction is completed;

$z'_{i,Company}$: is the transaction size of the LBO deal and target company size of VC deal; and

ξ_i : is the random error term.

The principle I applied to choose the IVs is that they should be exogenous and unlikely to be correlated with the error term but at the same time correlated with legal rules or economic outcomes. A number of the deal- and market-level variables can be applied as instrumental variables (IVs) to probe the endogenous concern. This study considers the financial market development index from The Global Competitive Report (Schwab and Sala-i-Martin, 2010; 2015) and Hofstede Culture Dimensions (Hofstede, 2015) as IVs. Using the former, I obtain eight indices from "Financial Market Development": Availability of Financial Services, Affordability of Financial Services, Venture Capital Availability, Soundness of Banks, Legal Rights Index, Ease of Access to Loans, Financial through Local Market, and Regulation of Securities Exchanges. Using the latter, I obtain six indexes: Power Distance Index, Individualism versus Collectivism, Masculinity versus Femininity, Uncertainty Avoidance Index, and Long-Term Orientation versus Short-Term Normative Orientation Indulgence versus Restraint.

The Hofstede Culture Dimensions are more related to takeovers and buyouts (Cao et al., 2015) and have been employed by Stromberg et al. (2011) and Kortum and Lerner (2001) in VC studies. Holding other factors constant, financing market size and depth (often in response to more LP participants such as pension funds and the successes of earlier transactions) leads to an acceleration of deal volume, greater use of leverage and higher valuations (see discussion in section 2.1.2). They contribute to the growth of the PE industry and are driven by broader socio-economic considerations, not by the PE industry itself. Further, La Porta et al. (1998) suggest that the legal variables applying at a macro-level serve as instrumental variables in cross-national regressions that can help explain the direction of causality in cross-national regressions that exhibit a correlation between legal rules and economic outcomes. Furthermore, indexes, such as PDI and VC availability, are closely related to the legal and professional normalities I am interested in testing, but they are unlikely to be correlated with the error term.

In this study, the transaction volume and number of employees of target firms as a function of instrument variables serve as exogenous regressors in both the VC and LBO subsamples. In VC subsample, I also consider the operating revenue of the target firm. I will run the Hausman F-test to justify that the regressor is instrumented and is treated as exogenous. Sanderson-Wanderlei (SW) F statistics will be examined to address the concern of underidentification. Considering that I use a group of more than one IVs, the Sargan test is also necessarily conducted to address the overidentification concern. Lastly, I will conduct other tests to justify my regression is robust to the weak-instruments problems.

Different from firm-level IVs such as transaction volume and number of buyers, country-level IVs are indexes thus they are inevitably subject to the collinearity problem. As in the

cross-border LBO study by Cao et al. (2015), I choose the same series of indexes of VC availability and that of financial market sophistication from the World Economic Forum (WEF) Financial Market Report (Schwab and Sala-i-Martin, 2010; 2015) and the Power Distance Index (PDI) from Hofstede Cultural Dimensions (Hofstede, 2015). The other indexes will be dropped because of collinearity. The results of the relevant tests of IVs using first-stage regression are given in Chapter five.

As my dataset is a cross-section, the cross-country character, the error terms are likely to suffer from heteroskedastic problems. As a result, the heteroskedastic-robust option will be chosen while running the above equations.

Based on the extensive discussion in section 2.2 and the results from studies by La Porta et al. (2006) and Djankov et al. (2007), Table 3.6 provides the expected signs of the independent variables.

Table 3.7 The Expected Signs of the Coefficients of the Examined Variables

Institutions	LBO sample		VC sample	
	WOY	Number of Advisors	Enterprise Multiple	Number of Advisors
Formal Institution				
Creditor Rights				
Credit right	-	-		
Shareholder Rights				
Control limit	n/a	n/a	-	-
Voting rights	n/a	n/a	-	-
Class action	n/a	n/a	-	-
Bylaws	n/a	n/a	-	-
Law/Debt Enforcement				
Foreclosure	n/a	n/a	-	-
Liquidation	n/a	n/a	-	-
Reorganisation	n/a	n/a	-	-
Public enforcement	n/a	n/a	-	-
Private enforcement	n/a	n/a	-	-
Informal Institutions				
Innovative financing	-	+	n/a	n/a
Analyst coverage	n/a	n/a	-	+
Social ties	-	+	-	+
Age	-	+	-	+

3.3.1.2 The Z-test

I expect that the informal institution dominates the formal institution in both the LBO and VC markets and, within all the formal institutional factors, that private enforcement dominates public enforcement. Following the Lee et al. (2014) test, I test H3 and H7 by manually calculating the z-stats combination coefficients from Equations 3.3 and 3.4. The z-stat is given as follows:

$$z_i \sim (n-k-1) = \frac{\beta_i^{public\_enforcement} + \beta_i^{firm}}{\sqrt{\left(SE_i^{public\_enforcement}\right)^2 + \left(SE_i^{firm}\right)^2}} \quad (3.5a)$$

$$z_i \sim (n-k-1) = \frac{\beta_i^{private\_enforcement} + \beta_i^{firm}}{\sqrt{\left(SE_i^{private\_enforcement}\right)^2 + \left(SE_i^{firm}\right)^2}} \quad (3.5b)$$

$$z_i \sim (n-k-1) = \frac{\beta_i^{formal\_institution} + \beta_i^{firm}}{\sqrt{\left(SE_i^{formal\_institution}\right)^2 + \left(SE_i^{firm}\right)^2}} \quad (3.6a)$$

$$z_i \sim (n-k-1) = \frac{\beta_i^{informal\_institution} + \beta_i^{firm}}{\sqrt{\left(SE_i^{informal\_institution}\right)^2 + \left(SE_i^{firm}\right)^2}} \quad (3.6b)$$

Equations 3.3a and 3.3b are used to test H1a, H2a, H4a, H5a and H6a and Equations 3.4a and 3.4b are used to test H1b, H2b, H4b, H5b and H6b. Equations 3.5a and 3.5b are used to test H3 and Equations 3.6a and 3.6b are used to test H7. The relationship between the statistical models and the corresponding hypothesis are given in Figure 3.4.

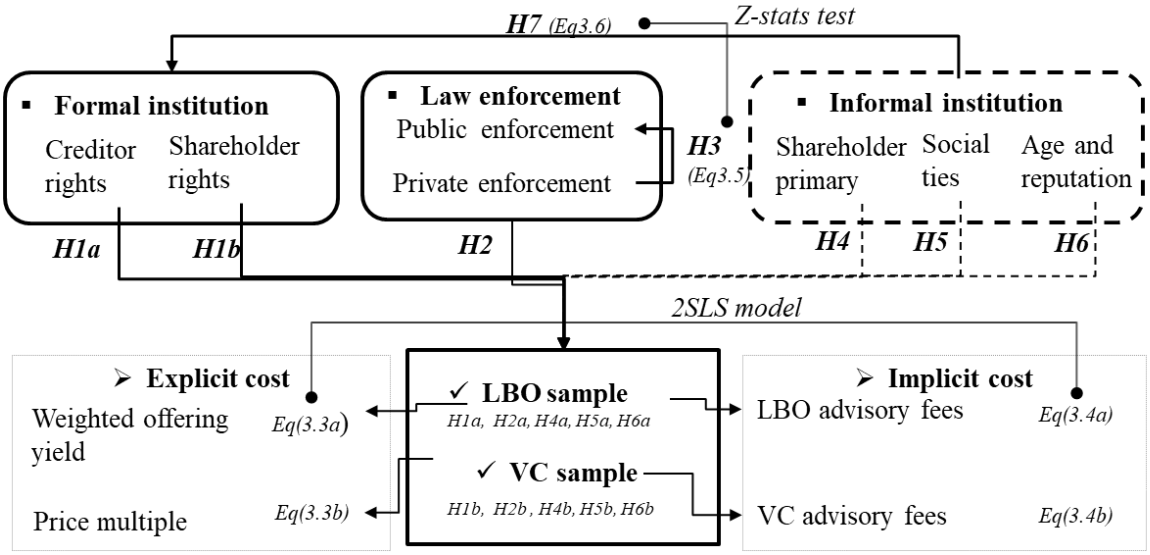


Figure 3.4 The Equations and the Relevant Examined Hypotheses

3.3.2 Dependent variables

The dependent variables in this study are:

1. *Explicit financing costs:* the LBO weighted offering yield and the reciprocal of enterprise multiple in the VC transaction.
2. *Implicit financing costs:* the number of financial and legal advisors involved in each LBO or VC transaction.

3.3.3 Independent variables

3.3.3.1 Formal institution

The formal institution examined in this study includes creditor rights (*CREDITOR*) (Djankov et al., 2007) and the shareholder rights index (*SHAREHOLDER*) (see Table 4.8). The two indexes are based on a scoring system in 2006 and 2013, respectively. Regarding the deadline, many transactions are completed and there is a "look-back" bias that cannot be avoided for the following reasons. First, a reliable research-quality index is very scarce. Djankov et al.'s (2007) work on creditors' rights has been cited over 2,300 times at the time of writing; the survey of CFAI is conducted through a professional association, which means its comprehensiveness and reliability are guaranteed. Second, there is no alternative proxy more suitable than a scoring system for cross-country, cross-sectional research. Third, the index for the institutional environment is less likely to be subject to time regime difference than other indexes such as GDP per capita, saving rate, and market size. The two most recognisable indexes suggested by La Porta et al. (1998) exhibit little ranking differences even after being amended by Djankov et al. (2007) and Spemann (2010). They have been recognised as remarkably stable over time (Miller and Reisel, 2011).

3.3.3.2. Informal institution

I use the following observations to capture professional norms at the PE-level: innovative financing activities in LBO transactions (shareholder primary norm); analyst coverage in VC transactions (shareholder primary norm); total registered professionals, total investment/subsidiaries, asset size and affiliations (social ties); and age. Considering that some PE financing providers are individual investors (shareholders, friends or relatives as angel investors of invested companies), they do not ideally represent business norms as

financing professionals. Hence, I leave the informal institutional observations of this sub-sample as missing values.

3.3.4 Control variables

It is widely accepted that legal and other institutions governing financing are endogenous to a number of general factors, such as the credit cycle (Kaplan and Stromberg, 2009); broader economic conditions; overall financial market performance, including equities; brokers-dealers' willingness to provide sufficient capital for market making; and general market supply and demand (Axelson et al, 2013; Black and Gilson, 1998; Cumming, 2008). In examining the efficiency of PE financing, the following factors will be controlled:

Firm-level characteristics. I use the transaction value of an LBO deal as a proxy for transaction size. For VC transactions, I use the target firms' number of employees from Zephyr as a measure of the target firm's size. I also control the percentage of the acquired stake of the target company (Beuselinck et al., 2008).

Financial market characteristics. Borrowing from the approach of Sorensen and Jagannathan (2015), I consider the return and cost of the public market as control variables. Because VC and LBO transactions are equity and credit financing, respectively, I consider two different market–level financing costs:

1. For debt financing tools in LBO transactions, the benchmark interest rate is generally the Treasury bond yield in the sampled country at the time the transaction took place. An ideal benchmark interest rate is the appropriate Treasury bond with a similar maturity schedule of the sample transaction. Given the diverse duration of LBO securities, I do not differentiate the term of each LBO financing but use a 10-year

treasury bond as a benchmark proxy. The benchmark interest is obtained by averaging the monthly average yield of local 10-year treasury bonds in the specific month that each transaction takes place.

2. The firms in my sample of VC transactions are unlisted firms. Thus a comparable enterprise multiple is not available. I use the return of the dominating stock market index of each sample country as a proxy for the enterprise multiple. The cross-sectional market return is the reverse of local P/E multiplier and is obtained by calculating the average monthly market return in the specific month that each transaction takes place.

3.3.5 Robustness tests

The sensitivity of the results to alternative specifications will be rigorously considered. Several robustness tests will be performed. First, I will test for the weakness of the results on targeted formal and informal institutions' characteristics by varying the sub-index in different combinations. Second, I will substitute the dependent variable with alternative measurements of direct financing cost (*WAS* in the LBO sample and $\left(\frac{\mathbf{EV}}{\mathbf{EBIT}}\right)^{-1}$ and $\left(\frac{\mathbf{EV}}{\mathbf{TA}}\right)^{-1}$in the VC sample). Third, I test formal and informal institution characteristics in different subsamples such as transaction status (complete, cancelled, or withdrawn). Finally, I test whether there are omitted variables that may explain the financing efficiency. In this step, an index system from the WEF global competitive report is applied.

This chapter sets the stage for the empirical evaluation of the economic efficiency of PE financing in both targeted formal and informal institutions. Each of the preceding models, generated from a literature review, is subjected to empirical validation in Chapter four.

CHAPTER FOUR

Data Specification

This chapter discusses the dataset covering two dominant types of PE-backed financing, VCs and LBOs. Section 4.1 describes the screen criteria of the study's sample data. Section 4.2 presents the macro-level financing indicators of the sample countries and firm-level operating characteristics of the PE-backed firms. Section 4.3 presents the cross-country comparison of the institutional environment that presumably shapes the activities of all involved parties. Section 4.4 discusses the specification of both the explicit and implicit costs of PE-backed financing.

4.1. Sample Selection of PE-Backed Financing Transactions

For this study, I obtained the LBO transaction data from CapitalIQ, which has been used in many pioneer LBO studies by the World Economic Forum and National Bureau of Economic Research. CapitalIQ records eight categories of private placement transactions, among which I chose the "merger and acquisition" subset and selected all transactions financed by a "leveraged buyout". As the focus of this study is on buyouts financed with anywhere from 60 to 90 percent debt, I do not consider other buyout transactions such as a "management buyout" or "joint venture/leveraged buyout" because they do not face the same level of the investment horizon. For financing cost, I include LBO deals with detailed information, such as offering yield, benchmark yield spread, and seniorities. CapitalIQ grants each deal one unique transaction identity number (ID). Within each LBO deal, there are usually more than one debt issuances and each of them is labelled with a unique security ID. The security ID combined

with the transaction ID enables me to assemble a unique record for one debt issuance in one LBO transaction. That is 2,152 debt issuances from 486 LBO transactions. The screen criteria of my LBO sample data are attached in the Appendix. Of the 486 recorded deals, 60 were cancelled. Of the total, 342 deals had closed, 81 remain active, and three had just been announced without further information. The average amount of debt issuance, for those with available observations, is €859.71million Such debt securities account for the debt part of economic value (EV) paid to target firms. My sample size is significantly smaller than previous studies by Gurung and Lerner (2008), which covered 21,397 transactions from 1970 to 2007, and by Kaplan and Stromberg (2009) with 17,171 PE-sponsored LBOs. The difference in the sample size is because of the distinct focus of this study. I do not consider a substantial number of transactions that lack observations of benchmark yield spread, offering yield, and seniority levels of the debt securities.

The data on VC-backed financing transactions were obtained from Zephyr. The Zephyr data set is sourced exclusively from the LPs, which includes the transactions and valuation history between LPs and investors. Zephyr provides extensive records of merger and acquisition transactions around the world since 1997. Among such transactions, those supported by VC and PE funds have been used by a few of studies (Bottazzi et al., 2004; Heughebaert and Manigart, 2012; Schertler and Tykvová, 2011). In this study, I consider deals at the start-up stage whose *buy-side* is financed via a VC or PE. As for generic VC financing, there are several specific financing tags to specify the source of VC funding. They are “angel investment”, “corporate venturing”, “crowdfunding”, or “development capital”. These types of financing have the same high risk with potentially high returns as VC investments and often invest alongside VC firms in financing rounds. Among them, angel investment includes “individual business angel”, “business angel syndicate”, “business angel fund”, “co-

investment fund" and "seed fund". The "corporate venturing" category denotes non-VC/PE companies joining a financing round with other acquiring companies that may be VC/PE companies. In crowdfunding, a deal receives equity funding via a crowdfunding platform and is used in conjunction with development capital and cash. Like Axelson et al.'s (2013) study, I delete outliers such as negative enterprise multiples and those with large extreme observations such as those whose enterprise multiples are greater than 100,000[25]. The above screening yields 2,595 VC financing deals with 2,551 firms. I winsorised the top 1 percent of deal value as well as the enterprise multiple to mitigate the influence of outliers.

Column 1, Tables 4.1 and 4.3 summarises the time period and industry distribution of my LBO and VC samples, respectively. Panel C, Table 4.3, presents the sample size grouped by investment stage of the VC-backed firms. The transaction size of target firms is much smaller in earlier-stage investment. The data also show that VC managers acquire a smaller proportion of target shares in earlier financing rounds (16.99% versus 20.70% in later rounds).

Before defining the timeline of the control and dependent variables, it is essential to clarify the completion date of each transaction. The completion date of each LBO transaction is unambiguous. However, for VC transactions in Zephyr, there is a string of important dates for a single deal: dates of the announcement, rumours, completion or expected completion date. In this study, I define the *completion* date of each deal as the date when the deal has been announced as completed or, in certain circumstances, has received approval to go ahead.

[25] A transaction with a negative enterprise level took place in Hungry on 24 August 2011. The target company's name is Hajdu-bet Baromfitermelo es Ertekesito rt. The acquirer was Wallis Befektetesi Gazdasagi Tanacsado es Vagyonkezelo rt. One transaction with over a 546,448 times EV/EBITDA multiplier was the acquiring of a 15% minority stake of Moby Invest, an Italian ferry service holding company, by Equinox, a Luxembourg PE manager on 28/02/02. (Zephyr).

Table 4.1 The Details of the LBO Transaction Sample

Panel A: Time period distribution of LBO transactions

Time period	Number of Observations (debt issuance)	Issuance amount (average in €mm)	Foreclosure	Liquidity	Reorganisation
1976-1980	4	654.70	0	0	1
1981-1985	36	977.43	0	0	10
1986-1990	189	988.69	2	0	47
1991-1995	203	925.84	0	1	55
1996-2000	319	711.02	0	1	86
2001-2005	343	896.04	4	3	81
2006-2010	419	1,131.15	3	3	95
After 2011	580	696.20	1	0	41
Total (excluding missing values)	2,093	859.71**	10	8	416

Panel B: Business sector distribution of LBO transactions

Business sectors *	Number of Observations (debt issuance)	Average Issuance (in €mm)	Average Number of Securities	Average Offering amount (in €mm)	Average Weighted offering spread (bps)	Average Weighted offering yield (%)
Consumer Discretionary	505	1,021.36	6.07	215.27	299.28	9.43
Consumer Staples	72	1,067.72	5.64	222.37	240.69	9.13
Energy	98	1,225.63	6.50	249.01	342.77	8.44
Financials	137	689.32	6.42	161.90	200.67	7.85
Healthcare	152	823.41	5.64	172.88	291.33	7.10
Industrials	295	713.49	5.71	152.77	299.05	9.26
Information Technology	151	1,151.26	5.77	242.05	280.39	7.95
Materials	132	729.12	5.93	168.43	347.24	9.85
Telecommunication Services	39	1,453.24	6.08	329.51	226.80	9.33
Utilities	60	782.06	6.40	165.05	252.98	8.60
Total (excluding missing values)	1,641	924.15	5.98	197.55	290.30	8.85

Note: * The categorisation of business sectors of the LBO sub-sample are the 10 primary business sectors of CapitalIQ.
**The average transaction values of the entire sample
Source: CapitalIQ.

4.2. Market Conditions and Firm-Level Operating Characteristics

As discussed in Chapter three, I do not consider nation-wide macroeconomic data such as GDP per capita and market capitalisation. Instead, I use market- and firm-level variables as control variables. In the LBO subsample, I use the benchmark spread as a proxy for LBO firm-level characteristics since it already captures the issuers' financial/operating characteristics as well as the overall credit conditions and liquidity premium. Table 4.2

presents brief statistics on the transaction volume and price indicators of the LBO deals. The data show the *transaction volume* of my LBO sample averaged $2,884.77 million and the total target enterprise value equalled $1,076,019.89 million. The price indicator of EV/EBITDA is 10.52 times. This is slightly higher than the sample in the study by Axelson et al. (2013) (average 8.8 EV/EBITDA multiple) but is close to the sample in the study by Gurung and Lerner (2008) (10.5 times EV/EBITDA multiple). These comparisons show that the leverage level of my sample target firms does not differ significantly from previous studies although my sample is much smaller.

Table 4.2 The Financial Characteristics of the LBO-Backed Firms

Valuation Summary		**Number of Deals by Transaction Ranges**	
Total Deal Value($m) *:	1,076,019.89	> $1 billion	161
Average Deal Value:	2,884.77	$500 - $999.9mm	52
Average TEV/Revenue:	2.52	$100 - $499.9mm	127
Average TEV/EBITDA:	10.52	< $100mm	33
Average Day Prior Premium (%):	18.18	Undisclosed	113

Note: *According to the original data from CapitalIQ, the currency unit of each offering amount of debt is in millions of euro (see Table 4.1); the data summary is in millions of US dollars.
Source: CapitalIQ

Panels A and B, Table 4.3, present the sample details of my VC-backed companies. Because I obtained the VC sample deals from a different database, the currency unit of this sub-sample is different from that of the LBOs. A brief view of the numbers in Table 4.3 shows that the sample transactions from Socialist countries comprise a significant proportion of the overall sample (567 deals), followed by the English- and French-origin groups. The time regime distribution of transaction records in Panel A, Table 4.3, shows a geographical shift of VC capital after 2011. After 2011, more VC funds have been searching for investment opportunities in Socialist countries from English and French legal origins. Among the socialist family, Chinese companies are the most favoured targets; there were 477 VC

financings that took place in China in the past five years (not reported here, but available upon request). The German group sample is small (49 with available records). When measured in paid-in capital, the transaction size in the German group (€50,444.01million) is over four times those of the Scandinavian (€7,335.28million) and English groups (€12,147.93million) and over double the French group (€22,534.74million) (not reported here but available upon request). In Table 4.4, I present the financial/operating characteristics of VC-targeted firms. The summary shows that the average total assets of the target firms are around €43million and the number of employee averages 260. The number in column 2, Table 4.4, shows that 2,172 of the 2,595 deals in my sample are smaller than €100,000.

Table 4.3 The Details of the VC Transaction Sample

Panel A: Transaction volume						
Time Period	**Paid-In Capital (1,000 €)**	**Number of Transactions across legal origin**				
		English	**French**	**German**	**Scandinavian**	**Socialist**
1997-2000	33,896.54	49	15		3	
2001-2005	20,534.34	35	144	4	13	9
2006-2010	21,711.85	89	164	13	15	60
After2011	33,195.37	299	157	32	51	567

Panel B: Business sectors distribution of VC transactions						
Business Sectors *	**Transaction Volume (1,000 €)**	**Obs**	**Acquired Stake (%)**	**Obs**	**Number of Acquirers**	**Obs**
Banks	29,075.04	13	16.85	13	1.46	13
Chemicals, Rubber	10,605.51	160	17.32	160	3.33	160
Construction	24,127.59	43	25.67	43	2.14	43
Education, Health	16,879.68	26	28.77	26	1.68	25
Food, Beverages,	7,202.15	115	19.93	115	1.47	111
Gas, Water, Elect	24,698.47	45	24.23	45	2.13	45
Hotels and Restaurant	4,503.23	44	24.31	44	1.14	43
Insurance Companies	19,568.99	22	22.06	22	1.77	22
Machinery, Equipment	8,291.30	478	18.45	478	2.95	473
Metals and Metal Product	10,449.85	62	17.43	62	2.51	61
Other Services	7,585.70	1,039	19.23	1,039	2.03	1,029
Post and Telecomm	35,725.74	33	31.84	33	2.03	33
Primary Sector	15,729.88	31	24.03	31	3.94	31
Public Administration	71,541.01	1	20.00	1	1.00	1
Publishing, Print	3,704.54	145	17.70	145	1.99	143
Textiles, Wearing	11,413.45	55	20.89	55	1.72	54
Transport	28,527.47	35	33.76	35	2.14	35
Wholesale and Retail	10,608.90	161	21.71	161	1.69	158
Wood, Cork, Paper	16,784.09	15	20.32	15	4.60	15
Total Average (excluding missing value)	9,700.16	2,523	19.89	2,523	2.26	2,495
Panel C: Investment stage of VC transactions						
Early Stage	5,054.04	396	16.99	396	2.46	389
Non-early stage	10,581.16	2,199	20.70	2,199	2.20	2,178
Total Average (excluding missing value)	9,737.71	2,595	20.14	2,595	2.24	2,567

Note: * The categorisation of business sectors of VC sub-sample are the 19 primary business sectors of Zephyr.
Source: Zephyr

Table 4.4 The Financial Characteristics of the VC-Backed Firms

Target company's Size		**Number of Deals by Transaction Ranges**	
Average Total Assets **(1,000 €)**	43,256.37	> €500,000	185
Average Revenue: **(1,000 €)**	38,746.22	€200,000 - €500,000	238
Average employee	260.13	€100,000 - €200,000	0
Average acquired stake (%)	20.14	< €100,000	2,172

Source: Zephyr

Table 4.5 shows the benchmark interest rate in 17 credit markets from 1976 to 2016. The benchmark returns of 37 equity markets from 1996 to 2016 are presented in Table 4.6. I divide the sample into five sub-groups of five years. Within each sub-group, the right-hand column names the cited bonds index (see Table 4.5) or local equity index (see Table 4.6).

Table 4.5 Benchmark Interest Rate of the LBO Sampled Countries

Country Code	Benchmark Lending Rate (%)								Number of Deals								Benchmark*
	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2010	2011-2015	1976-1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2010	2011-2015	
AR						5.71			0	0	0	0	0	0	0	0	EG358129 Corp
AU						5.21			0	0	0	0	0	1	0	0	GAGB10YR
BR							14.49		0	0	0	0	0	0	1	0	GEBR10Y
CA				7.66	5.61		3.94		0	0	1	2	3	0	2	0	GCAN10YR
CH				4.54					0	0	0	1	0	0	0	0	GSWISS
DE				6.91		3.95	3.76		0	0	0	1	0	0	1	0	GDBR10YR
FR						4.15		0.84	0	0	0	0	0	2	0	0	GFRN10
GB						4.70	4.45	1.98	0	0	2	0	0	1	2	1	GUKG10
IE					5.36	5.25			0	0	1	0	1	1	0	0	GIGB10YR
IT						3.45			0	0	0	0	0	1	0	0	GBTPGR10
JP							1.47		0	0	0	0	0	0	0	0	GJGB10
LU				6.50			4.72		0	0	0		0	0	1	0	GBGB10YR
NL					5.02	4.00	3.86		0	0	0	0	1	3	1	0	GTNLG10YR Corp
NZ						5.78			0	0	0	0	0	0	0	0	GTNZD10YR
SE					5.79				0	0	0	0	0	0	0	0	GSGB10YR
SG						2.76	3.12		0	0	0	0	0	1	1	0	MASB10Y
US	7.86	11.90	8.39	6.88	5.94	4.45	3.85	2.32	1	10	46	52	84	76	90	41	USGG10Y
Other														1	3	1	

Note: The first column represents country names in the ISO Alpha-2 code.
*The choice of benchmark is discussed in section 3.3.4. The benchmark interest rates of the US and UK were obtained from Bloomberg. For benchmark interest rates before 2000 in the sample countries, I obtained the *quarterly* government lending rate from the IMF. The chosen quarter is the *quarter* during which the transaction took place.
Source: Bloomberg, IMF.

Table 4.6 Benchmark Interest Rates of the VC Sampled Countries

Country Code*	1996-2000		2001-2005		2006-2010		2011-2015		2016-		Index
	Market Return	**# Of Deals**	**Market Return**	**# Of Deals**	**Market Return**	**# Of Deals**	**Market Return**	**# Of Deals**	**Market Return**	**# Of Deals**	
AU			-1.64%	8	-2.24%	2	-1.96%	7		0	AS51 Index
BE		3	1.15%	9	3.01%	6	4.31%	5		0	BEL20 Index
BR			3.79%	2	3.71%	4	-2.23%	8		0	IBX Index
CA			-0.03%	6	0.26%	47	-0.14%	29		5	SPTSX Index
CH	-9.10%		3.53%	1	-1.54%	6	-1.09%	3		0	SMI Index
CN			3.17%	4	0.50%	35	2.62%	80	1.47%	4	SHSZ300 Index
CZ			4.11%	1		0	2.02%	2		0	TELEC CK Equity
DE	4.94%		4.14%	4	1.72%	19	0.18%	12	0.92%	1	DAX Index
DK			-7.43%	2		5		2		0	DESMCOPE Index
ES	0.11%	6	-0.28%	21	-0.25%	30	3.75%	15		0	IBEX Index
FI			4.89%	4	-0.78%	8	-3.14%	5		0	HEX Index
FR	3.35%	3	1.67%	21	-0.27%	42	-1.82%	10	-4.55%	3	CAC Index
GB	1.21%	45	-0.19%	11	0.32%	16	-0.05%	36	0.52%	3	UKX Index
GR			-4.16%	1	-2.24%	1		0		0	ASE Index
HK				0	13.58%	4		0		0	HSI Index
HU			-3.53%	1	0.31%	1	-0.29%	1		0	BUX Index
ID				0		0	-2.24%	1		0	JCI Index
IE	2.20%	1	4.48%	2	-10.10%	2	-2.29%	2		0	ISEQ Index
IL			0.12%	2		9		3		0	TA-25 Index
IN	-1.47%		4.15%	12	2.20%	36	-0.82%	51	-7.73%	1	NIFTY Index
IT		2	-0.83%	8	-2.35%	32	2.61%	20	2.82%	2	FTSEMIB Index
JP			2.91%	6	0.56%	7	2.32%	5		0	NKY Index
KR				0	3.60%	8	1.37%	6		0	KOSPI Index
LU*				0	1.49%	3	5.29%	1		0	BEL20 Index
MX				0		0	-2.24%	1		0	MEXBOL Index
MY			-4.79%	2		0		0		0	FBMKLCI Index
NL			-2.35%	3	0.61%	9	0.75%	8		0	AEX Index
NO			4.14%	3	-0.25%	7	6.96%	2		0	OSEBX Index
NZ				0	0.19%	2	2.05%	5		0	NZSE50FG Index
PL			5.68%	2	0.91%	18	-2.75%	9	2.28%	2	WIG20 Index
PT			-0.38%	4	-2.14%	2		0		0	PSI20 Index
RU			-2.50%	1	2.13%	5	0.37%	17		0	INDEXCF Index

Country Code*	1996-2000		2001-2005		2006-2010		2011-2015		2016-		Index
	Market Return	**# Of Deals**	**Market Return**	**# Of Deals**	**Market Return**	**# Of Deals**	**Market Return**	**# Of Deals**	**Market Return**	**# Of Deals**	
SE	-7.09%		2.41%	19	1.74%	24	-0.12%	21		0	SAX Index
SG				0	0.68%	5		0	2.30%	1	WISGP Index
TH			-4.69%	2	1.45%	2		0		0	SET Index
TR				0		0	-2.24%	3		0	XU100 Index
TW			-2.24%	1		0	-2.24%	1		0	TWSE Index
US	0.54%		-0.64%	11	0.87%	46	-0.12%	103	0.69%	11	SPX Index
ZA			-0.32%	1	-0.10%	9	-0.15%	1		0	TOP40 Index

Note: The returns are calculated at *monthly* frequency in all sampled markets in the month during which the VC-backed transaction was *completed*.
The first column represents country names in the ISO Alpha-2 code.
Source: Bloomberg.

4.3. Institutional Condition

4.3.1 Formal institutions

4.3.1.1 Creditor rights and debt enforcement

The cross-country comparison of creditor rights is given in Table 4.7. Column 2, Table 4.7, shows that 8 of the 20 sampled countries are from the reorganisation group. Among them, transactions from the US account for most of the sample. Applying the cross-country index of creditor rights in the LBO study can be challenging because LBO financing is more a US phenomenon. Statistics from Gurung and Lerner (2008) show that transactions in Europe and Asia consist of a small proportion of the deals (12%) and enterprise value (9%) of global LBOs. The geographical cluster of my formal institution observations in the LBO sample does not fundamentally influence my final result since I take into account the joint impact of both formal and informal institutions.

Table 4.7 Creditor Rights across the Countries in the LBO Sample

Country	(1) Creditor Rights	(2) Debt Enforcement	(3) Legal Origin
Argentina	1	Reorganisation	France
Australia	1	Foreclosure	Britain
Bermuda			Britain
Brazil	1	Liquidation	France
Canada	1	Reorganisation	Britain
Cayman Islands			Britain
Channel Islands			Britain
France	0	Reorganisation	France
Germany	3	Liquidation	Germany
Ireland	1	Reorganisation	Britain
Italy	2	Reorganisation	France
Japan	2	Reorganisation	Britain
Luxembourg			
Netherlands	2	Liquidation	France
New Zealand	3	Foreclosure	Britain
Singapore	4	Foreclosure	Britain
Sweden	2	Liquidation	Norway?
Switzerland	1	Reorganisation	France
United Kingdom	4	Foreclosure	British
United States	1	Reorganisation	British

Note: No studies have covered offshore islands such as The Cayman Islands, Channel Islands or Bermuda.
Source : La Porta et al. (1998) and Djankov (2007).

4.3.1.2 Shareholders rights and law enforcement

Table 4.8 presents the ranking of shareholder rights and law enforcement across countries. All sub-indexes are grouped by legal origin. Columns 1 to 3, Table 4.8, shows the sub-indexes of the three state-mandated formal laws of ownership limit, proxy voting restrictions and class actions. Column 1, Table 4.8, shows that an ownership limit is not applicable in most sampled countries. Only a few companies in “sensitive” industries, such as aerospace and national defence, are legally bound by the ownership limit. This is true for the US, Canada, Brazil, France, the UK, Switzerland and Turkey. In China, the limit is imposed on foreign investors as well as institutional investors (a maximum 10 percent). Other countries that restrict controlling ownership include Italy, Russia and Spain. Column 2, Table 4.8,

shows that there are 28 countries with no proxy voting restrictions. However, in Brazil, Japan, and Thailand, proxy voting is permitted only under certain conditions. Among the sample countries, Italy applies the strictest proxy voting restrictions. According to Italian law, votes cannot be "disjointed" from the same beneficial owner and the shares must be deposited before the end of the general meeting. Derivative suits and class action lawsuits are not legal except for India and the US.

The two bylaw sub-indexes also vary across countries. For voting policy, except for Spain, a majority voting policy is applied. Cumulative voting is rarely applied in companies in all sampled the countries except Brazil, China, Poland, Russia, Spain and Thailand. In the US, only a small minority of companies apply a cumulative voting policy. The aggregated score of the voting policy is presented in Column 4, Table 4.8. Column 5 presents the sub-index of the oppressed minority mechanism. This mechanism grants minority shareholders certain rights to affect a company's fundamental decisions such as the remuneration policy or a dissident resolution. Based on the survey by CFAI (2013), almost all 28 countries are in the study sample with the exception of Mexico.

For the other usual practices and trends of ownership concentration and corporate governance (proportion of independent board members and independent audit committees), the statistics in Columns 6 and 7, Table 4.8, show that Indian companies have the highest proportion of controlling shareholders (82.6%); the country with the lowest proportion of shareholders is Taiwan (2.10%). The US has the highest percentage of independent board members (82%) followed by the UK (79.45%) and India (76%). Japan has the lowest proportion of independent board member (8.15%).

Table 4.8 Shareholder Rights across Countries in the VC Sample

Country Code	Shareholder Rights							Law Enforcement	
	(1) Control limitation	(2) Proxy voting restriction	(3) Class action/derivative suit	(4) Voting policy	(5) Oppressed minorities mechanism	(6) Independent board member (%)	(7) Public companies have a controlling shareowner (%) *	(8) Public Enforcement	(9) Private Enforcement
English origin									
AU	2	5	3	1	3	72.40	4.00	0.90	0.71
CA	3	5	4	2.5	3.5	79.45	21.20	0.86	0.96
HK	6	5	1	4.5	3.5	45.30	53.90		
IN	1	5	1	1	4.5	45.65	52.50	0.72	0.79
ID	3	5	1	1	4	59.75	82.60		
IE	5	5	4	3	4.5	60.85	22.20	0.27	0.61
MY	3	5	2	2	3.5	63.50	34.50	0.84	0.79
MX	6	5	2	1	3.5	38.25	56.50		
NL	1	3.5	4	1	3.5	76.30	11.80	0.38	0.75
SG	3	5	1	1	3.25	59.25	46.20	0.88	0.83
ZA	1	5	1	1	4.5	64.55	21.70		
TH	3	3.5	1	3.5	3	76.50	33.30		
UK	1	5	1	2	3.75	79.50	7.60	0.67	0.75
US	6	5	1	3.5	3.75	82.20	8.40	0.88	1.0
French origin									
FR	6	5	1	3.5	3.75	39.75	36.30	0.80	0.49
IT	6	1	1	1	4.5	30.05	40.00	0.38	0411
ES	4	5	4	3.5	3.75	29.80	32.60	0.38	0.58
TR	3	3	4	2.5	3.5	20.60	72.20	0.56	0.36
German origin									
AT	3	4	1	1	3.75	25.60	45.80	0.19	0.18
DE	2	4	1	1	4	19.10	36.60	0.25	0.21
JP	3	4	1	1	3.25	8.15	6.10	0.00	0.71

Country Code	Shareholder Rights							Law Enforcement	
	(1) Control limitation	(2) Proxy voting restriction	(3) Class action/derivative suit	(4) Voting policy	(5) Oppressed minorities mechanism	(6) Independent board member (%)	(7) Public companies have a controlling shareowner (%) *	(8) Public Enforcement	(9) Private Enforcement
KR	3	5	1	5	3.75	34.30	12.10	0.29	0.71
CH	2	3.5	3	1	3	55.80	23.60	0.21	0.55
TW	3	5	1	1	3.75	20.40	2.10	0.44	0.71
BR	3	2.5	1	3.5	3	21.35	65.30	0.52	0.29
Socialist origin									
CN	1	5	1	2	3.75	44.85	61.10		
PL	3	5	1	3	4.5	20.65	50.00		
RU	6	5	1	3.5	2.5	43.70	68.20		

Note: The scoring rule is available in Table 3.2. The first column represents country names by ISO Alpha-2 code.
*When collecting data, the measurement of controlled shareowners considers the possibility that shareholders are affiliated with each other thus raising the effective concentration (e.g., family, government, majority block holder).
Source : CFAI (2013), La Porta et al. (2006)

In columns 8 and 9, I present the indexes of public and private law enforcement applied in this study. Public enforcement measures the supervisory, investigative and sanctions powers. Higher public law enforcement reveals the better ethics standards of government agencies, better documenting in equity financing, and effective criminal/civil sanctions on violations. Private enforcement measures the disclosure requirements of confidential information such as equity ownership structure (e.g., each shareholder who directly or indirectly controls 10 percent of the voting shares) and irregular contracts (outside the ordinary course of business). Private enforcement also measures the burden of proof (the procedural difficulty in recovering losses from directors and accountants, distributors) (La Porta et al., 2006). It is worth noting that the law enforcement index applied in my study has a distinct focus on financing activities in the public market. However, it is common sense that such measures are more likely to be consistent than not across the nation-wide capital markets as market sophistication and political practices are the same in both public and private placement markets.

4.3.2 Informal institutions

A brief review of the 486 LBO transactions recorded in CapitalIQ shows that each target company, on average, issues a total of six securities (see Panel B, Table 4.1). Apart from straight debts such as term loans, corporate debentures, or corporate medium-term notes (MTN), a certain proportion of LBO financing applies to structured securities of CDS (credit default swap) or ABS (asset backed security) (see Panel A, Table 4.9).

4.3.2.1 Innovative financing instruments in LBOs

I obtain the data securities' seniority tranches from "Seniority Level" in CapitalIQ. I compute the total number of unsecured debts using the total number of senior subordinated, junior

subordinate, and subordinate securities[26]. I also consider the structured securities (CDS), convertible debts and preferred stock in each LBO transaction from "Fixed Income Security Type". There are 64 transactions in the LBO sample financed by structured securities of CDS with a total of 336 tranches. A total of 24 deals were financed using convertible debt (124 tranches). Of the seniority tranches, 374 issuances are unsecured. Among all debts, 1,637 have available records of offering yield, whereas 1,763 have a yield spread (see Panel A, Table 4.9).

Table 4.9 Informal Institutions in the LBO and VC Samples

Panel A: Distribution of debt security types in the LBO samples				
Security types	**Number of security types**	**Number of security types (%)**		
		Foreclosure	**Liquidation**	**Reorganisation**
Structured Securities (%)	1.29	4.62	6.47	1.02
Preferred Shares (%)	2.38	2.57	0	1.61
Convertible Debt (%)	4.24	0	10	3.62
Straight Bonds (%)	92.09	92.81	83.53	93.75
Unsecured Securities (%)	16.52	10.74	3.5	13.45
Total number of securities (excluding the missing value) *	2,131	56	40	2,035

Panel:B: Distribution of analyst coverage in the VC samples						
Information disclosure**	**Number of Transactions**	**Number of VC Transactions across legal origin**				
		English	**French**	**German**	**Scandinavian**	**Socialist**
Analyst Coverage	1,035	636	278	25	36	60
Voluntary Disclosure**	870	149	131	34	41	515
Compulsory Disclosure	208	56	8	19	16	109
Total (excluding the missing value)	2,088	841	417	53	93	684

Note: * The statistics number of other debt securities, preferred shares and convertible debt are available in Table 4.10.
** Voluntary disclosure refers to press releases; compulsory disclosure refers to all forms of disclosure made through the stock exchange.
Sources: CapitalIQ, Zephyr

It is worth noting that the observation of security type of convertible debts and preferred stock (security) and seniority level are *not* mutually exclusive. However, my CDS sample has

[26] Based on Basel III, I define the senior unsecured tranche as "secured" because all senior claims enjoy same claimant priority as high as that of bank loans. https://www.bis.org/bcbs/publ/d424.pdf

no observation of seniority level. This is because all CDS in "Fixed Income Security Type" tab in CapitalIQ do not have matching seniority level under the tab of "Seniority Level" because they are not labelled with a unique ID.

Table 4.10 A Cross-Country Comparison of Issuance of LBO Debt Securities

Country Code	Total Securities	Structured Securities	Preferred Shares	Convertible Securities	Straight Bonds	
					Total	Unsecured Securities
Foreclosure domain						
AU	5	0	0	0	5	3
GB	37	18	1	0	18	2
NZ	4	0	0	0	4	0
SG	10	4	1	0	5	0
Liquidation Domain						
BR	5	0	0	0	5	0
DE	10	5	0	0	5	0
NL	25	15	0	5	5	1
Reorganisation Domain						
CA	37	9	8	0	20	5
CH	5	4	1	0	0	0
FR	10	10	0	0	0	0
IE	15	10	0	0	5	0
IT	5	0	0	0	5	0
US	1,963	261	50	119	1,532	367
Other and offshore islands						
BM	1	0	0	0	1	0
KY	5	0	0	0	5	2
LU	15	0	3	0	12	6
BM	1	0		0	1	
Total (excluding the missing value)	2,152	336	64	124	1,627	386

Note: The first column represents country names in ISO Alpha-2 code.
Source: CapitalIQ

I present the cross-country comparison of the issuance of debt securities in Table 4.10. I find that in countries, especially the US, where reorganisation is applied, LBOs are most likely to be financed through unsecured debt. Among the 1,826 securities issued, 367 are unsecured which comprises nearly one-fifth of the study sample. In Australia, the UK and Singapore, where foreclosure is applied, the insolvency procedure does not protect unsecured creditors since they have no pledged collateral to claim for recovery and reorganisation is not a default option (or the first attempt). Most debt securities (90 per cent) in the foreclosure group are secured. The proportion of unsecured securities in this group is far smaller than the

reorganisation group. In the liquidation domain of Brazil, Germany and the Netherlands, very few LBO deals are financed with unsecured debt. There is no record of the issuance of convertible debt in the foreclosure group. The only sample in the liquidation group financed through convertible debt is the LBO deal of the Wright Medical Group N.V. (NASDAQ's: WMGI) in the Netherlands in 2014.

Table 4.10 shows that approximately one-tenth of the debt in the reorganisation group is structured; this ratio is less than half of that in both the foreclosure and liquidation groups. Among the sampled transactions, all four LBO transactions from France (WFS Global SAS; Rexel SA; Groupe ACTi call SAS; and Legrand SA) are financed with CDS with a variety of security tranches. Conversely, LBO transactions in Australia, New Zealand, Brazil, Italy, Luxemburg and the offshore islands (the Cayman Islands and Bermuda) are not financed with structured securities debt (see Table 4.10).

4.3.2.2 Analyst coverage in the VC-backed transactions

I obtain information about the analytical coverage through Zephyr's "source of documentation". There are four main sources of documentation: target (parent) announcement/press release/website, advisor submission/analyst speculation electronic publication (financial media and journals), stock exchange and miscellaneous. Given that one VC-backed deal has more than one record of the source of documentation, I define a deal as having analyst coverage if the documentation is obtained via *analyst submission* or *analyst speculation*. In the case of a deal with multiple records of analyst coverage, I use the *sum* of a number of records to represent the intensity of analyst coverage. Based on the Zephyr record, among the 2,085 sampled companies that disclosed deal information, 950 had records from analyst coverage (see Panel B, Table 4.9). The numbers also show that analysts in the English

group were more active in information disclosure with 636 of 841 sampled deals having analyst coverage. On the other hand, analysts in the Socialist group were less active in information disclosure. For example, in China, only 12 companies had analyst coverage in a large sample of 654 target companies (not reported here). However, the Socialist group is significantly active in voluntary information disclosure, using the press releases more than the other groups.

4.3.2.3 Social ties

Both CapitalIQ and Zephyr provide records of the key characters of involved professionals in each recorded transaction, e.g., the founding year and number of involved advisors. CapitalIQ also provides the number of registered professionals and number of subsidiaries of each advisor. Both databases provide the financial performance of active PE managers such as the revenue, EBITDA, total assets and a number of employees. Because of a large number of missing values, this study considers only the variables with the largest number of available observations such as the founding year, number of employees and number of registered professionals/prior subsidiaries (for LBO sample only). Since the professional files are kept as a distinct sub-dataset in Capital IQ, I manually match the sub-dataset of the transactions with professional files by matching the *official name* of PE managers with that of *buyers' names* in each LBO transaction record. To obtain as many valid observations as possible for this variable, I consider all professional files of "active financial buyers" and all "PE firms" in CapitalIQ. I also measure the social ties of LBO managers by the number of employees (or their ultimate owner(s) depending on which observation is available) and total investment/subsidiaries. If an LBO transaction has more than one PE manager involved, I use the *average* value of all available observations. This process yields 191 observations of the business profile of PEs. The summary of social ties is given in Panel A, Table 4.11.

Table 4.11 The Statistics of the Age and Social Ties in the LBO and VC Samples

Variable	Obs	Mean	Min	Max
Panel A: LBO Sample				
PE's Age	183	26.03	2	100.00
Total Investment/Subsidiaries	191	565.17	30	1,825.00
Prior Investment/Subsidiaries	191	288.25	0	1,097.00
Current Investment/Subsidiaries	191	276.92	30	747.00
Professionals	191	439.50	3	1,623.00
Current Professionals	191	218.47	3	794.00
Panel B: VC Samples				
PE's Age	2,547	5.21	0.00	211.00
PE's Affiliations				
Banker	105			
Government and Education	64			
Individual	259			
PE's Revenue (1,000 €)	734	1,468,555.00	-1,174.19	68,300,000.00
PE's Total Assets (1,000 €)	2,548	3,417,156.00	0.00	1,110,000,000.00
PE's Number of Employees	2,548	634.68	0.00	225,000.00

Note: except for the age observation, all measurements are most updated value or those dating back to the "last available year" in CapitalIQ and Zephyr at the time of writing.
Sources: CapitalIQ, Zephyr

I present the business affiliation of the sampled VC investors in Table 4.11. Like Gompers and Lerner (1998), I distinguish the social ties of VC managers (or their owners, if any) by business type [27]. I generate dummy variables representing the following three types of social ties: financial institutions related to VC managers refers to those whose ultimate owner is: a bank, financial company, hedge fund, insurance company, mutual/pension fund/trust, private equity firm, or VC firm. Government-affiliated VC firms are those owned by foundations/research institutes and public authorities/states/governments. The rest of the VC sponsors are those owned by industrial companies and individuals/families. Because one deal could involve more than one VC, the three dummy variables of business affiliation are *not*

[27] Unlike CapitalIQ, Zephyr does not provide observations of managers' total investments/subsidiaries or number of registered professionals. We hence manually match the manager's company name using the CapitalIQ database. This screening yields a total of 143 observations regarding VC manager's age, 132 and 240 observations of VC manager's total investments/subsidiaries and registered professionals, respectively.

mutually exclusive. Using Zephyr, I further provide the VCs' size by using their parent company's (or their ultimate owner(s)', if any) total assets and number of employees. Panel B, Table 4.11 shows the most reputable or experienced VC managers have an asset size of €1,109,887.741 million (Royal Bank of Scotland Group PLC) and a worldwide total of employees of 225,000 (JP Morgan).

4.3.2.4. Age

I calculate the VC firms' ages using the number of years since the date of incorporation (or founding year of VC firm/fund or its parent organisation, if any) by the *completion* date of the transaction. If one transaction has more than one VC manager, I use the *earliest* founding year. The founding year of VC funds/firms is obtained from CapitalIQ. Panel B, Table 4.11, shows that the average ages of PE managers for LBO and VC transactions are 26 and 5 years, respectively. The data indicate a much younger management panel in my VC sample.

4.4. Financing Cost of PE-Backed Transactions

I obtain transaction information on the two types of PE from two separate databases; I separately discuss the data of financing cost of VC and LBO deals.

4.4.1 Explicit financing cost

4.4.1.1 Explicit financing cost of LBO-backed transactions

To obtain the explicit financing cost in LBO financing, I manually assemble data from the following separate observations: "fixed income security type", "seniority level", "offering yield", "offering amount", and "yield spread". I match each debt security's name, amount, and yield using the unique identity code of each specific security. Generally, one LBO transaction is funded by a number of debt securities, and the information is aggregated in one

paragraph. I separate the paragraph using the "text to columns" option in Excel to obtain the yield information of every single security. I present the statistics of the various yield/spread levels of debt issuance of my LBO sample in Table 4.12. In Panel A, Table 4.12, I compare the explicit financing cost by three types of judicial debt enforcement. The numbers show the sample of 486 LBO deals with a weighted average spread of 290 bps and an offering yield of 8.96%. Looking across the countries in Panel A, Table 4.12 I find that LBO deals in the reorganisation group pay the second highest spread (292.89 bps) and the highest offering yield (9.06%) of the groups. A comparison of debt enforcement efficiency in Panel B, Table 4.12 shows that the time-efficient group offers a smaller yield spread and offering yield; the reverse is true for the cost-efficient group.

Table 4.12 Creditor Rights and Financing Costs in the LBO Sample

Insolvency Procedure	Transaction Value (€m)		Offering Yield (%)		Yield Spread (bps)	
	Value	Obs	Value	Obs	Value	Obs
Panel A: Judicial debt enforcement						
Foreclosure	1,484.35	10	7.23	7	167.60	9
Liquidation	1,808.04	8	6.02	6	325.46	7
Reorganisation	820.06	415	9.06	323	292.89	374
Other	1,068.69	6	8.01	5	262.73	4
Total	856.59	439	8.96	341	290.28	391
Panel B: Enforcement efficiency						
Cost Efficient						
Less Than 10	856.93	432	8.99	335	290.45	25
More Than 10	835.63	7	7.27	6	277.83	366
	856.59	439	8.96	341	290.28	391
Time efficient						
Less Than 1.5 Years	1,263.26	29	7.46	20	255.56	386
More Than 1.5 Years	827.83	410	9.05	321	292.66	5
Total	856.59	439	8.96	341	290.28	391

Sources: CapitalIQ, Djankov (2008).

4.4.1.2 Explicit financing cost of VC-backed transactions

Table 4.12 exhibits the explicit financing cost of VC-backed transactions grouped by the three sub-indexes of state-mandated shareholder rights. I rank each shareholder right sub-

index in ascending order with a minority-friendly preference. A simple comparison between financing cost $(\frac{EV}{EBITDA})^{-1}$ in each panel in Table 4.13 shows that the equity financing cost borne by VC-backed firms is, on average, 7.8 percent and that the relationship between shareholder rights and financing is U-shaped. It is obvious that the target firms had borne lower financing costs in both the most and least minority friendly countries (see Panels A and B, Table 4.13). Checking the raw data from Zephyr, I find a few giant VC-backed transactions took place in the least minority friendly countries (e.g., Italy). Because of the positive skewness of my observations of VC financing cost, the average statistics are inevitably biased by the outliers. However, if I take into account the average deal value and number of observations in each row in Table 4.13, the cost is, on average, lower in the minority friendly countries. The relationship between shareholder rights of class action and financing cost are different from those in the previous two sub-index groups.

Table 4.13 Shareholder Rights and Financing Costs in the VC Sample

Shareholder Rights	Target Value (EV) ($m)	$(EV/EBITDA)^{-1}$ (%)		$(EV/EBIT)^{-1}$ (%)		$(EV/TA)^{-1}$ (%)	
		Mean	Obs	Mean	Obs	Mean	Obs
Panel A: Proxy Voting							
1	54,579.42	8.45	59	5.15	55	58.82	115
2.5	198,148.00		-	20.31	3	137.31	6
3	294,054.00		-		-	80.67	2
3.5	140,208.09	8.67	4	6.67	10	76.08	35
4	24,522.00	9.22	2	4.13	2	70.96	7
4.5	191,796.05	8.63	18	5.26	71	63.32	134
5	67,908.51	7.45	628	6.12	847	65.07	1,232
Panel B: Ownership Limit							
1	62,012.14	6.29	57	5.09	56	54.70	118
2	132,228.90	7.04	3	3.59	3	48.21	29
3	84,604.07	9.98	39	9.06	44	105.76	98
4	147,427.96	17.68	7	12.43	6	80.59	24
5	196,765.06	8.98	17	5.30	70	67.71	112
6	67,371.57	7.39	588	5.98	809	62.45	1,150
Panel C: Class Action							
1	69,765.74	7.24	646	6.00	816	65.10	1,189
1.5	99,958.36	11.51	22	9.68	19	128.79	39
2	43,215.57	8.78	17	5.65	71	41.56	136
2.5	136,950.89	16.11	2	8.72	6	66.56	28
3.5	186,580.90	11.52	24	5.86	76	69.19	139

Note: * The sub-index of each shareholder right is ranked in ascending order based on minority friendly preference (see Chapter 3).
Source: Zephyr

4.4.2 Implicit financing cost

As discussed in Chapter three, I apply the number of advisors, from the *target-side*, involved in PE-backed financing transaction as the proxy for implicit cost. The summary of the advisory group in the sample transactions is given in Table 4.14. I categorise the advisors into two types: financial advisors and legal advisors. Panel A, Table 4.14 exhibits the advisor involvement, regarding the number of advisors of the LBO sample. I notice that the LBO transactions in the foreclosure domain, on average, involve more than two legal advisors and two financial advisors, a total of four advisors, which is an above average number of advisors. LBO transactions in the liquidation domain record the smallest number of advisors (fewer than two). Compared with LBO financing, VC financing involves a much smaller advisory group. In Panel B, Table 4.14, I see each transaction hires fewer than two advisors

regardless of the legal origin. VC deals in the French origin group require the largest advisor group. In Panel B there is no big difference in the number of advisors between the buyer and seller groups.

Table 4.14 The Implicit Cost in the LBO and VC Samples

Panel A: Number of advisors in LBO sample							
Advisor type	**Foreclosure**	**Liquidation**	**Reorganisation**	**Obs**	**Mean**	**Min**	**Max**
Target-side advisors	4.17	1.67	3.91	276	3.88	1	13
Legal advisor	2.4	1.67	2.13	248	2.13	1	7
Financial advisor	2	0	1.9	247	1.89	1	5
Buy-side advisors	10.86	6.33	5.6	271	5.71	1	69

Panel B: Number of advisors in VC sample									
Advisor type	**English**	**French**	**German**	**Scandinavian**	**Socialism**	**Obs**	**Mean**	**Min**	**Max**
Target-side advisors	1.33	1.53	1.00	1.45	1.72	710	1.20	1	2
Legal advisor	1.48	1.72	1.00	1.41	1.02	738	1.20	1	2
Financial advisor	1.22	1.40	1.00	1.16	1.02	584	1.13	1	4
Buy-side advisors	1.38	1.60	1.14	1.31	1.35	266	1.45	1	9

Note: The statistics exclude the missing value.
Sources: Data in Panel A were obtained from CapitalIQ; Data in Panel B were obtained from Zephyr.

Table 4.15 A Summary of the Variables (Abbreviations and Descriptions)

Abbreviation	Financing costs	Page No.
WAS	The weighted average spread	63
WOY	Weighted average offering yield	62
$(\frac{EV}{EBITDA})^{-1}$	Financing cost (reciprocal of enterprise multiple of the VC transaction: EV/EBITDA)	65
ADVISORS	Total number of both legal and financial advisors for the buyer side	66
	Formal institution	
CREDITOR	La Porta et al. (1997) and Djankov et al. (2007)	68
SHAREHOLDER	CFAI (2013)	71
PUBL_ENFORCEMENT *PRIV_ENFORCEMENT*	Law enforcement index from La Porta et al. (2006)	75
FORECLOSURE *LIQUIDATION* *REORGANISATION*	Dummy variable equals one if the county applies foreclosure/liquidation/reorganisation proceeding in the case of bankruptcy, zero otherwise. Djankov et al. (2008)	75
	Informal institution	
pct__Unsecure	The number of unsecured securities issued in a single LBO transaction as a proportion of total issued securities	81
pct_CDS	Number of credit default swaps (CDS) issued in a single LBO transaction as a proportion of total issued securities	81
pct_Preferred	Number of preferred stocks issued in a single LBO transaction as a proportion of total issued securities	81
pct_Convertible	Number of convertible bonds issued in a single LBO transaction as a proportion of total issued securities	81
ANA_COV	Number of records of analyst coverage	80
VOLUNTARY	Number of records of voluntary disclosure	80
MEDIA	Number of records of media coverage	80
COMPULSORY	Number of records of compulsory disclosure	80
BANK	Dummy variable equals one if the business type of ultimate owner of VC manager is a financial institution, zero otherwise	82
GOVT-EDU	Dummy variable equals one if the business type of ultimate owner of VC manager is government or research institution, zero otherwise	82
INDIVIDUAL	Dummy variable equals one if business type VC manager's PE fund, a hedge fund, zero otherwise	82
SUBSIDIARIES	Total investments/subsidiaries	90
PROFESSIONAL	Total registered professionals	90
AGE	Years passed since the PE manager was founded by the completion date of the transaction	84
BUYERS	Number of buyers in an LBO deal	91
	Control variables	
MARKET	10-year Treasury bond yield 30 days before the completion date of the LBO transaction; average equity market return in the sampled country 30 days before the completion date of the VC transaction	96,97
Ln (TRANSACTION)	Total transaction value of LBO deal	96
STAKE	Percentage of the acquired stake of the target company	96
Ln (TARGET_SIZE)	The logarithm of the target firm's number of employees	96

CHAPTER FIVE

Results Discussion

This chapter discusses the empirical results of the study. The chapter is organised as follows: Section 5.1 describes the model specification. Section 5.2 discusses the impact of legal rights and law enforcement on PE-backed financing costs. I also compare the significance of the two different law enforcement regimes. Section 5.3 presents the analysis of the three informal institution factors, and section 5.4 compares the aggregated impact of the formal institutions against that of informal institutions. The economic analysis of PE financing is discussed in section 5.5. Section 5.6 concludes the results discussion.

5.1. Model Specification

The regressions used in this study are two-stage least squares models (2SLS) (see section 3.3.1.1). In testing the implicit financing cost of advisory fees against the institutional variables in the LBO and VC samples, I apply the ordinary-least-squares model (OLS). I do not address the endogeneity of transaction size and target size in these regressions because, after conducting the Hausman test, it is not a concern as I previously conjectured. I use instrumental variables to address the concern of endogeneity of the transaction size and target size in Equation 3.3a and 3.3b, respectively[28]. As the dependent variables vary in each equation of my model, the instrument regressors differ correspondingly. The instrument variables used in Equation 3.3a are the Legal Rights Index, Availability of Financial Services

[28] I obtain data from two divergent datasets. The instrumented regressor is tailor-made for the LBO and VC samples. The transaction size in the LBO sample is the natural logarithm of deal value in nominal dollars. In the VC sample, we use the target size, which is the natural logarithm of the number of employees of the target firm.

and Financial through Local Market (Schwab and Sala-i-Martin, 2015), Availability of Financial Services (Schwab and Sala-i-Martin, 2010) and Long-Term Orientation versus Short-Term Normative Orientation (Hofstede, 2015). Those used in Model 3.3b are the index of Indulgence versus Restraint, Power Distance Index (Hofstede, 2015) and revenue of target firm from Zephyr. I do not claim the instrumental variables (IVs) are perfect in my 2SLS regressions. Instead, the endogeneity tests of weak- and over-identification show that the instruments in each model have decent explanatory power after exhaustive trials[29]. First, I test the weak identification concern using Wald F statistics. The Stock-Yogo weak ID test critical value for the Wald F statistic for 10% size distortion is 19.93. Tables 5.1 and 5.3 show that all regressions' Kleibergen-Paaprk Wald F statistic exceeds the critical value of 19.93 suggesting a rejection of the null hypothesis of weak instruments. Secondly, I use the Hansen test for over-identification restrictions because I have more than one IVs in one instrumental regressor. The Hansen test follows a Chi-square distribution. If the test statistic exceeds the critical value, I reject the null hypothesis that at least one instrument is not exogenous and that the instrumental regressor is correlated with the structural error.

The baseline results of Equations 3.3a, 3.3b, 3.4a and 3.4b are given in Tables 5.1, 5.2, 5.3 and 5.4, respectively. To mitigate collinearity concern, I insert the legal index and law enforcement variables one by one in each regression. I treat the regression with one sub-index as a single model. Lastly, I present the F-statistic of the first stage regression in column one in Tables 5.1 and 5.3. I see that the first stage regression exceeds the critical value of 10, indicating that the instrumented regressor is significant. Table 5.5 presents the z-test results

[29] As discussed in section 3.3.1.1, I conducted exhaustive trials to find the proper regressor. The Models we presented in Chapter three are those addressing all specification criteria. There are, however, a few exceptions in that the Hansen test is significant at a marginal level of 10% (for example, Model 3, Table 5.3). I keep these Models because they do not materially bias my overall results. The record of overall trials is available upon request.

of hypotheses H3 and H7. The robustness tests given in Tables 5.6 to 5.9 are robust to alternative specifications.

5.2. Formal Institutions

5.2.1 Creditor rights

Tables 5.1 and 5.2 present the baseline results of the LBO sample. In the following two sections, I discuss the results of the explicit cost of weighted offering yield (*WOY*) and advisory fees (*ADVISORS*).

5.2.1.1 Creditor rights with weight offering yield

The results for Model 1 in Table 5.1 suggest that the estimated coefficient of creditor rights index exhibits a significant negative impact on the explicit cost *WOY* (see row 1, Model 1). This finding remains robust after replacing the dependent variable with *WAS* (see Table 5.7). It is worth noting that the creditor rights index I apply comprises a socially optimal value of going concern (reorganisation preference) dominating a liquidation value while, at the same time, securing the repossession of collateral (Djankov et al., 2008). Based on Djankov et al.'s definition, a higher creditor rights index indicates that a secured creditor has the following privileges in the case of reorganisation: 1) dissent the petition of reorganisation, 2) an automatic stay on the pledged collateral (usually the business) or, 3) run the pledged business but do not allow the borrowers to remain on the managerial board. As displayed in Table 4.10, the debt securities issued in LBO financing consist mostly of unsecured bonds in the reorganisation domain and structured securities (usually with contingencies of redeemable rights or voting rights) in the foreclosure domain. Unlike unsecured bonds, the structured bonds grant the LBO fund provider a putable option to leave the company with a fixed payoff. My result suggests that the most economical choice for those LBO fund providers is to

repossess or preserve the firm as a going concern because they are better off turning the business around. Using LBO financing as a novel example where debt holders share different seniority ranking, this study supports the view that the most basic right of a creditor is the right to repossess and then liquidate or keep collateral in the case of default (Aghion et al., 1992; Baird, 1995; White, 1989).

Table 5.1 A 2SLS Analysis of Explicit Cost in the LBO Sample

	1st stage			2nd stage	
		(1)	(2)	(3)	(4)
VARIABLES	$\widehat{Ln(TRANSACTION)}$	***WOY***	***WOY***	***WOY***	***WOY***
CREDITOR	-0.756***	-0.713**			
	(0.190)	(0.339)			
FORECLOSURE			-2.605***		
			(0.801)		
LIQUIDATION				1.021*	
				(0.565)	
REORGANISATION					1.772*
					(1.003)
Pct_Unsecure	-0.575***	0.701	0.584	2.147***	0.682
	(0.0849)	(0.619)	(0.548)	(0.439)	(0.642)
Pct_CDS	1.300***	0.719	0.675	-3.189***	0.841
	(0.182)	(1.618)	(1.141)	(0.701)	(1.773)
Pct_Convertible	0.0653	-2.535***	-2.405***	-2.639***	-2.569***
	(0.166)	(0.394)	(0.427)	(0.503)	(0.392)
PROFESSIONAL	-0.000208**	-0.000750**	-0.000844***	-0.000245	-0.000743***
	(8.71e-05)	(0.000294)	(0.000325)	(0.000246)	(0.000287)
AGE	0.0145***	0.0218*	0.0244***	-0.0106	0.0230*
	(0.00170)	(0.0121)	(0.00842)	(0.00783)	(0.0135)
$Ln(\widehat{TRANSACTION})$		-0.216	-1.505	0.218	-1.505
		(0.870)	(0.970)	(1.567)	(0.970)
MARKET	-0.109***	0.163	0.139	0.577***	0.174
	(0.0336)	(0.274)	(0.250)	(0.154)	(0.266)
Constant	3.424**	13.58*	14.07**	-5.531*	11.68
	(1.393)	(8.167)	(6.777)	(3.130)	(7.296)
Industry	Yes	Yes	Yes	Yes	Yes
Observations	112	112	112	112	112
R-Squared	0.731	0.417	0.423	0.332	0.399
1st-stage F Stat	24.75***				
2nd-stage F Stat		61.15***	71.92***	22.64***	41.94***
Wald F Stat		17.60***	32.99***	25.82***	10.56***
Hansen J		1.391	1.27e-06	1.978	1.486

Note: This table presents the results of the 2SLS test using the LBO sample. I regressed the financing cost of the *WOY* against the aggregated creditor rights index and three debt enforcement dummies (foreclosure, liquidation and reorganisation). I addressed the endogeneity concern of target firm size (natural logarithm of target firms' number of the employees). The first stage regression is reported in the left-end column (only the first-stage result of the creditor rights index is reported). The instrument variables in four models include the Legal Rights Index, Availability of Financial Services and Financial through Local Market (Schwab and Sala-i-Martin, 2015), Availability of Financial Services (Schwab and Sala-i-Martin, 2010) and Long-Term Orientation versus Short-Term Normative Orientation (Hofstede, 2015). The second stage is regressed using the estimated transaction size given in columns 1 to 4. The robust standard errors clustered at the firm level are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

5.2.1.2 Creditor rights and advisory fees

My investigation of the correlation between creditor rights and advisory fees implies that higher creditor rights account for higher advisory fees (see Table 5.2). In practice, as suggested by Djankov et al. (2008), "seizure and sell" the collateral can be an out-of-court procedure or a case under the supervision of the court. Either way, the process of insolvency diverges across countries and it inevitably induces costs (see section 5.2.3 for further discussion).

Table 5.2 An OLS Analysis of Implicit Cost in the LBO Sample

	(1)	(2)	(3)	(4)
VARIABLES	***ADVISORS***	***ADVISORS***	***ADVISORS***	***ADVISORS***
CREDITOR	1,104**			
	(434.6)			
FORECLOSURE		4,839***		
		(1,250)		
LIQUIDATION			-3,610***	
			(1,024)	
REORGANISATION				-2,299*
				(1,325)
Pct_Unsecure	1,097	1,197	781.1	1,018
	(873.0)	(842.7)	(910.1)	(888.8)
Pct_CDS	196.7	584.6	1,981	279.1
	(1,239)	(1,124)	(1,220)	(1,270)
Pct_Convertible	1,360	887.1	1,315	1,535
	(1,110)	(1,125)	(1,140)	(1,108)
PROFESSIONAL	-0.205	0.683	-1.602	-0.726
	(2.513)	(2.579)	(2.702)	(2.507)
AGE	8.086	13.68	9.482	6.130
	(20.56)	(20.70)	(22.06)	(20.69)
MARKET	1,387***	1,515***	1,136***	1,305***
	(336.6)	(350.1)	(323.0)	(329.8)
BENCHMARK	666.9***	684.4***	654.2***	658.6***
	(67.18)	(71.65)	(67.21)	(65.40)
Constant	-4,047**	-3,472**	-1,098	-204.5
	(1,926)	(1,698)	(1,763)	(1,738)
Industry	Yes	Yes	Yes	Yes
Observations	100	100	100	100
R-Squared	0.545	0.569	0.534	0.535

Note: This table presents the results of the OLS test of institutional environments and their impact on the advisory fees in the LBO sample. I regressed total advisory fees (standardised number of total advisors every $1,000,000 of transaction size) against creditor rights index and three debt enforcement dummies (foreclosure, liquidation and reorganisation). The robust standard errors clustered at the firm level are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Should the dollar sign be where I put it?

In summary, creditor rights reduce the *WOY* but at the cost of advisory fees. We, therefore, partially accept hypothesis H1a and conclude that creditor rights reduce the explicit financing costs of *WOY*. Given that half of my sample countries and 90% of my sample transactions belong to the reorganisation group (LBOs in the US account for the bulk of the recorded transactions), the coefficient of creditor rights is inevitably biased by the reorganisation sample. However, the above findings obtained from using different explanatory variables of creditor rights are fundamentally consistent with each other.

5.2.2 Shareholder rights

Tables 5.3 and 5.4 present the baseline results of the VC sample. Model 1 in both Tables 5.3 and 5.4 exhibits the estimated coefficient of aggregated minority-friendly shareholder rights index against the dependent variable of $(\frac{EV}{EBITDA})^{-1}$and *ADVISORS*. Models 2 to 6 in Tables 5.3 and 5.4 further decompose the aggregated shareholder rights into five sticks and they exhibit their individual impact on financing costs. My decision rule on the hypothesis (H1b) is that the significance of the estimated coefficient of aggregated shareholder rights index is the arithmetic sum of the five sub-indexes.

5.2.2.1 Shareholder rights with the financing cost of $(\frac{EV}{EBITDA})^{-1}$

Table 5.3 presents the results of the 2SLS regression of shareholder rights and the estimated relationship with the explicit financing costs of $(\frac{EV}{EBITDA})^{-1}$. I find that the *aggregated* minority-friendly shareholder rights index imposes a significant negative impact on $(\frac{EV}{EBITDA})^{-1}$. The estimated coefficient suggests that as the shareholder rights increase by 1, the overall financing cost would be reduced by 1.97%. When I consider each stick of shareholder rights, I find strong evidence that the relief of proxy voting restriction

(Proxy_voting) significantly reduces $(\frac{EV}{EBITDA})^{-1}$ at 1% significance level. The same is true for bylaws on voting policy (*Voting_policy)* (see Models 2 and 5, Table 5.3). On the other hand, with the other three sticks of legal rights: ownership limit (*Ownership_limit*), class action (*Class_action*), and oppressed minority mechanism (*Oppressed*), I find consistent opposite results. Among them, the estimated coefficient of *Oppressed* in Model 6, Table 5.3, is significant at the 1% level. The possible reason for the significant positive relationship between *Oppressed* and $(\frac{EV}{EBITDA})^{-1}$ could be that the oppressed mechanism works unfavourably for potential VC investors. Soliciting external shareholders of VCs will bring the target firm subsequent corporate or capital structure changes that include nomination of a board member or issuance of diluting shares and other comparable proposals. According to Manigart et al. (2009), VCs focus on ways to monitor the funded firm to maximise oversight and protecting their resources. If the oppressed mechanism is weak, e.g., the board of commissioners can only approve the remuneration of board members (e.g., in Indonesia), or existing shareholders are not given a vote on general remuneration issues (e.g., in China), or existing shareholders need to present a certain percentage of *voting stocks* before requesting an extraordinary general meeting (e.g., in Australia), the VCs are more likely to offer a higher enterprise multiple. The reverse is also true.

Table 5.3 A 2SLS Analysis of the Explicit Cost of the VC Sample

VARIABLES		1st stage	2nd stage				
		(1)	(2)	(3)	(4)	(5)	(6)
	$Ln(\widehat{TARGET\_SIZE})$	$(\frac{EV}{EBITDA})^{-1}$	$(\frac{EV}{EBITDA})^{-1}$	$(\frac{EV}{EBITDA})^{-1}$	$(\frac{EV}{EBITDA})^{-1}$	$(\frac{EV}{EBITDA})^{-1}$	$(\frac{EV}{EBITDA})^{-1}$
SHAREHOLDER	44.95	-1.970***					
	(39.93)	(0.689)					
Proxy_voting			-1.855***				
			(0.674)				
Ownership_limit				3.219*			
				(1.890)			
Class_action					9.451**		
					(4.175)		
Voting_policy						-3.121***	
						(1.092)	
Oppressed							9.906***
							(3.596)
PUBL_ENFORCEMENT	673.4	-24.05***	3.605	35.09*	-5.237	-17.78***	-16.19**
	(770.0)	(8.778)	(4.224)	(20.96)	(4.482)	(6.861)	(6.595)
PRIV_ENFORCEMENT	-949.8	58.79***	22.44**	-14.12	-18.73	45.33***	40.16**
	(698.9)	(20.82)	(10.73)	(14.39)	(13.35)	(16.56)	(15.64)
ANA_COV	42.89	1.029	0.828	0.0694	0.842	1.039	0.831
	(57.92)	(1.621)	(1.619)	(1.645)	(1.607)	(1.622)	(1.619)
BANK	12.28	0.321	0.246	0.0977	0.443	0.326	0.247
	(60.05)	(1.858)	(1.855)	(1.857)	(1.872)	(1.859)	(1.855)
GVT_EDU	-64.80	3.525*	3.476	3.644*	3.982*	3.531*	3.476
	(68.49)	(2.124)	(2.125)	(2.169)	(2.214)	(2.124)	(2.125)
INDIVIDUAL	-79.06	-1.610	-1.666	-1.577	-1.238	-1.604	-1.665
	(57.80)	(1.582)	(1.604)	(1.652)	(1.560)	(1.581)	(1.604)
AGE	2.557	-0.00559	-0.0104	-0.0345	-0.0188	-0.00540	-0.0103
	(1.658)	(0.0592)	(0.0586)	(0.0562)	(0.0578)	(0.0593)	(0.0586)
$Ln(\widehat{TARGET\_SIZE})$		0.0375	0.0570	0.201	0.156	0.0372	0.0566
		(0.530)	(0.530)	(0.525)	(0.515)	(0.530)	(0.530)
MARKET	593.9*	11.04	9.531	6.260	13.09	11.15	9.549
	(338.5)	(10.64)	(10.57)	(10.57)	(11.14)	(10.65)	(10.57)
STAKE	0.766	0.0526	0.0508	0.0498	0.0587*	0.0527	0.0509
	(1.186)	(0.0338)	(0.0340)	(0.0359)	(0.0352)	(0.0338)	(0.0340)
Constant	-129.8						
	(337.7)						
Observations	117	117	117	117	117	117	117
R-Squared	0.687	0.157	0.150	0.111	0.134	0.157	0.150
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stage	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1st-stage F Stat	13.74***						
2nd-stage F Stat (p-value)		0.0438	0.0605	0.390	0.138	0.0442	0.0600
Wald F Stat		24.61	27.01	31.89	32.54	24.47	26.98
Hansen J		0.290	1.058	3.176*	1.815	0.228	1.051

Note: This table presents the results of the 2SLS model using the VC sample. I regressed the $(^{EV}/_{EBITDA})^{-1}$ on shareholder rights index and law enforcement dummies. I addressed the endogeneity concern of target firm size (natural logarithm number of the employees). The first stage regression is reported in the left-end column (only the aggregated shareholder rights index is reported). The instrument variables are the index of Indulgence versus Restraint (Hofstede, 2015) and the revenue of target firm from Zephyr (not reported here). The second stage is regressed using the estimated target size given in columns 1 to 6. The robust standard errors clustered at the firm level are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Although the impact on $(\frac{EV}{EBITDA})^{-1}$ by each stick of shareholder rights contradicts the others, the arithmetic sum exhibits an overall significant impact of a lower$(\frac{EV}{EBITDA})^{-1}$. The result remains robust with the alternative dependent variable of the $(\frac{EV}{Revenue})^{-1}$(see Table 5.8).

Across all regression models in Tables 5.3 and 5.7, the variable of proxy voting restriction stands out. This finding, combined with those in Table 5.4 (discussed in subsection 5.2.2.2), is consistent with the assertion that a voting mechanism is essential for shareholders to secure their desired outcomes and to form their valuation of the firms (Deangelo and Deangelo, 1985; La Porta et al., 2000). My finding supports this assertion using evidence from the private placement market and argues that minority friendly voting rights increase LPs' (or fund unithoders) confidence thus reducing the financing costs for entrepreneurs. For example, if Brazil were to release the common restriction on proxy voting one step further, from "sometimes" to "no mostly", the score in my index would increase by 0.5. This change reduces the financing cost by approximate 0.9% (0.5 times -1.855%).

5.2.2.2 Shareholder rights and advisory fees

The aggregated shareholder rights index exhibits a non-significant negative impact on *ADVISORS* (see Model 1, Table 5.4). Consistent with the statistical estimates in Table 5.3, I find that tightening the proxy voting restriction is significantly correlated with lower advisory fees (see Model 2, Table 5.4) suggesting a strong influence on lowering financing costs. In contrast, *Ownership_limit* has a positive impact on advisory fees at the 10% significance level (see Model 3, Table 5.4). It is worth noting that the control limitation is subject to public market regulations whereby founders achieve previously promised business milestones such as an IPO or M&As. Based on anecdotal evidence recorded in Zephyr and the results of

my models, I conjecture that the control limit will likely increase the enterprise's advisory fees in preparing regulatory filings especially when the VCs are foreigners or in syndication[30].

Similarly, *Oppressed* is significantly related to higher advisory fees. The oppressed minority mechanism, by its definition, works conversely compared with proxy voting rights. The VCs could put nominee proposals in proxy ballots only when the oppressed minority mechanism is valid. This, however, requires the target company's compliance or verification cost to reach a congruent goal with outside shareholders of the VCs. In a country like Brazil, the oppressed minority mechanism is difficult and expensive to execute. I expect that the advisory cost for the enterprises is higher when the oppressed mechanism is applied. Based on the results in Model 6, if the score of this sub-index increases by 0.25 (e.g., let the shareholders introduce dissident resolutions and see the scoring rule of shareholder rights in Table 3.2), it reduces the need for advisors by approximately one person for each €17,000,000 ($16{,}736 = \frac{€1{,}000{,}000}{0.25 \times 0.239}$) of funds raised. However, in a country such as Poland or France, where four oppressed minority mechanisms are standard practice, there should be concern about high advisory fees from the enterprise's side.

Class_action shows no significant correlation with advisory fees (see Model 4, Table 5.4). It is notable that although class action provides a cost-effective, convenient access to legal remedies, it is rarely applied in the real business world. This is the situation in South Africa, Spain, Hong Kong and Thailand. In a country such as Turkey, the class action remains just as

[30] For example, on 12 December 2014, a syndicated VC-backed transaction took place in China and acquired an existing stake of 37.57% from an enterprise named *Neusoft Medical Systems*. Among the three venture capitalists, one registered in the British Virgin Island is Prestige Will Global Ltd. The transaction was pending approval from the Ministry of Commerce and other authorities. In the case that *Neusoft Medical Systems* goes public in the future, the ownership of institutional investors needs to be controlled under a 10% ceiling. If this is the case, more financial and legal advisory fees will be expected.

a concept. The plausible explanation for the significant coefficients of *Class_action* in Table 5.3 is that it is correlated with other societal determinants that are correlated with financing costs.

Table 5.4 An OLS Analysis of Implicit Cost the VC Sample

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	***ADVISORS***	***ADVISORS***	***ADVISORS***	***ADVISORS***	***ADVISORS***	***ADVISORS***
SHAREHOLDER	-0.00746					
	(0.0107)					
Proxy_voting		-0.0483**				
		(0.0211)				
Ownership_limit			0.0315*			
			(0.0170)			
Class_action				-0.0478		
				(0.0546)		
Voting_policy					-0.0254	
					(0.0226)	
Oppressed						0.239***
						(0.0890)
PUBL_ENFORCEMENT	-0.0568	0.0336	0.228	0.0434	-0.0986	-0.353*
	(0.158)	(0.128)	(0.165)	(0.142)	(0.163)	(0.188)
PRIV_ENFORCEMENT	-0.170	-0.114	-0.424**	-0.147	-0.130	0.165
	(0.206)	(0.139)	(0.164)	(0.217)	(0.188)	(0.186)
ANA_COV	0.267***	0.281***	0.257***	0.252***	0.270***	0.266***
	(0.0700)	(0.0672)	(0.0701)	(0.0736)	(0.0695)	(0.0681)
BANK	-0.00668	-0.0171	-0.0250	-0.0106	-0.00624	-0.0210
	(0.0642)	(0.0625)	(0.0646)	(0.0645)	(0.0635)	(0.0619)
GVT_EDU	-0.151***	-0.158***	-0.163***	-0.152***	-0.153***	-0.174***
	(0.0526)	(0.0545)	(0.0543)	(0.0529)	(0.0529)	(0.0555)
INDIVIDUAL	0.0150	0.00807	0.0122	0.0193	0.0139	0.00161
	(0.0570)	(0.0554)	(0.0565)	(0.0576)	(0.0567)	(0.0554)
AGE	0.00367**	0.00413**	0.00368**	0.00345**	0.00383**	0.00415**
	(0.00163)	(0.00168)	(0.00155)	(0.00158)	(0.00166)	(0.00167)
Ln (TRANSACTION)	-0.00755	-0.00930	-0.00312	-0.00529	-0.00858	-0.00814
	(0.0158)	(0.0157)	(0.0147)	(0.0146)	(0.0159)	(0.0157)
MARKET	-0.288	-0.282	-0.331	-0.320	-0.278	-0.280
	(0.357)	(0.356)	(0.365)	(0.363)	(0.353)	(0.345)
STAKE	-0.00132	-0.00147	-0.00152	-0.00149	-0.00127	-0.00113
	(0.00120)	(0.00127)	(0.00122)	(0.00118)	(0.00121)	(0.00126)
Constant	0.0826	0.165	-0.144	-0.0543	0.0336	-0.979**
	(0.218)	(0.192)	(0.186)	(0.170)	(0.173)	(0.390)
Investment Stage	Yes	Yes	Yes	Yes	Yes	Yes
Industry	Yes	Yes	Yes	Yes	Yes	Yes
Observations	239	239	239	239	239	239
F-test	3.468	3.586	3.486	3.806	3.492	3.730
R-squared	0.186	0.182	0.185	0.184	0.185	0.182

Note: This table presents the OLS regressions of the institutional environments and their impact on the implicit financing cost in the VC sample. I regressed the total advisory fees (standardised number of total advisors every €1,000,000 of transaction size) on shareholder rights index and law enforcement dummies. The robust standard errors are in parentheses with ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

In summary, my examination of aggregated shareholder rights shows significant correlation with lower $(\frac{EV}{EBITDA})^{-1}$ but the insignificant correlation with advisory fees. Combining the baseline results of Model 1 in Tables 5.3 and 5.4, I accept hypothesis (H1b) that higher shareholder rights induce lower financing costs based on the view of fund-searching enterprises.

5.2.3 Law enforcement

In this section, I explore the relationship between law enforcement and financing cost based on my findings in Tables 5.1, 5.2, 5.3 and 5.4.

5.2.3.1 LBO sample

For the LBO sample, I use the debt enforcement dummies from Djankov et al. (2008) as explanatory variables for debt enforcement and present the results of the 2SLS regression in rows 2 to 4 in Tables 5.1 and 5.2. My finding for the foreclosure solution (*FORECLOSURE*) is consistent with the aggregated index of creditor rights. In countries where foreclosure is a default/preferred settlement of default/insolvency, secured creditors could dissent a reorganising petition or seize the collateral immediately before the reorganisation begins. However, the results for Model 2 in Table 5.2 also suggest that *FORECLOSURE* results in higher advisory fees. This is consistent with the descriptive statistics in Table 4.14 that debtors in the foreclosure domain need more advisors. Conversely, I find that debt enforcement of *LIQUIDATION* and *REORGANISATION* account for lower advisory fees at the 1% and 10% significance level, respectively (see Models 3 and 4, Table 5.2).

My findings on the debt enforcement solutions are consistent with those of Djankov et al. (2008) except for *FORECLOSURE*. According to Djankov et al. (2008), the sample countries

belonging to foreclosure group (the UK, Australia, New Zealand and Singapore) endure average insolvency costs of 1-8%[31], which is significantly smaller than the average but not significantly different from the rest of the high-income level country group. The difference between my study and Djankov et al. (2008) is partly because of the computation of debt enforcement costs[32]. Another reason for the different conclusion is that my samples are restricted to LBO deals. Unlike a simple bankruptcy case of a hotel (does not expect to continue operations), the creditors (usually unsecured debt holders of deal initiators, in LBO cases, the PEs) have an incentive to reconstruct the distressed company but rather sell the business piecemeal. This creditor "going-concern" preference in LBO deals raises the need for additional financing in the future for the target firm to operate. As noted by Djankov et al. (2008) overlooking additional financing need may bias their results in favour of foreclosure.

The most important reason why *FORECLOSURE* accounts for the need for more advisors could be that the proportion in the sample of straight bonds in the foreclosure domain is larger than the other two domains. LBO deals usually involve a large creditor group with various seniority claims. The conflicts of interest among creditors create major complications. In the court-supervised domain other than foreclosure, debtors intend to get away from formal bankruptcy by using complex financing contracts (e.g., convertible bonds; see Table 4.10). Contrarily, LBO-backed firms in the foreclosure domain appear to be less adaptable to the legal environment so they need more advisors to deal with the complexity of the deal.

[31] Djankov et al. (2008) apply a wide variety of costs (as a percentage of the value of the estate, borne by *all parties*) such as attorney, notification, publication, administrator, assessor and inspector fees, asset storage and preservation costs, liquidation/auctioneer fees, government fees/levies, and other fees.

[32] I use an approximate measure of advisory costs and only consider the cost from the target company's side. In addition, most of my country samples in the foreclosure group are high-income countries (the exceptions are Brazil and one offshore island). My sample precludes us from comparing advisory costs between countries with different income levels as Djankov et al. (2008) did.

When taking into the account of the implicit cost of advisory fees, the overall impact of each debt enforcement dummy is complicated. The foreclosure solution accounts for significantly less *WOY* at the 1% significance level. This relationship remains robust after replacing *WOY* with an alternative measure of *WAS* (see Table 5.7). However, *FORECLOSURE*, at the same time, induces significantly higher advisory fees. *LIQUIDATION* exhibits a significant positive correlation with the financing cost of *WOY* at the 10% significant level (see Table 5.1) and, at the same time, is significantly correlated with lower advisory fees at the 1% significance level (see Table 5.2). My finding on *REORGANISATION* is consistent with the descriptive statistics in Table 4.1. The *REORGANISATION* results are of higher *WOY* and *WAS* at the 10% and 5% significance level, respectively. However, this is correlated with lower advisory fees at the 10% level. Based on the estimated coefficients of *FORECLOSURE*, *LIQUIDATION* and *REORGANISATION*, I cannot reach a conclusion about their overall impact on financing cost.

Nevertheless, my study regarding debt enforcement provides new evidence of the correlation between LBOs and creditor rights as in Cao et al. (2015). I extend Cao et al.'s (2015) finding by highlighting that debt enforcement with different preferences works differently when considering advisory fees. I suggest that debt enforcement with a reorganisation (repossession) value increases (decreases) a firm's demand for uncollateralised or unsecured credit, which, in turn, raises the offering yield. I also suggested that debt enforcement with a first attempt at reorganisation (repossession) will likely decrease (increase) the advisory cost.

5.2.3.2 VC sample

1. Public and private enforcement

In testing law enforcement in the VC sample, I apply the law enforcement index from La Porta et al. (1998). The results show that both public and private enforcement impose a significant impact on $(\frac{EV}{EBITDA})^{-1}$, but work in opposite directions (see rows 7-8, Table 5.3). Public enforcement accounts for a significantly lower financing cost across Models 1, 5 and 6. However, in Model 3, it is positively related to $(\frac{EV}{EBITDA})^{-1}$ at the 10% significance level. A plausible reason could be that this variable may be correlated with the error term as discussed in Note 29 that this model is the one exception that did not pass all the specification criteria. Private enforcement, however, is related to a higher financing cost. This implies that better public enforcement, in terms of supervisors' investigative powers and criminal or civil sanctions, encourages the PEs' confidence thus raising the bidding price they are willing to offer to a given target enterprise. The sign of the estimated coefficient of private enforcement in rows 7-8, Model 1 in Table 5.3, suggests that private enforcement works unfavourably from the demand side of fund-searching enterprises. This argument is coherent with the empirical evidence in the private placement market. Private enforcement, to the extent that it requires disclosure of detailed equity ownership structure[33], of irregular contracts outside the ordinary course of business and the higher burden of proof (referring to the difficulty of recovering losses from directors and accountants) somehow deprives the information advantage of PEs. The information advantage is presumably where abnormal returns come from a knowledge resource that financial intermediaries are brokering (Blyler and Coff, 2003; Toms et al., 2015). It is reasonable that VCs are less willing to offer a higher bid price to a

[33] For example, while VCs search for an exit through an IPO on the main board, the local securities regulation committee may require the firm to disclose information about shareholder(s) who directly or indirectly control 10% of the voting shares.

given enterprise when private enforcement is tight. My finding regarding private enforcement is coherent with that of analyst coverage, which will be discussed in section 5.3.

Table 5.4 shows the test statistics on the correlation between law enforcement and advisory fees. The *t*-statistic in Model 3 indicates at the 5% significance level that in a country with solid private enforcement there is less demand for advisory services. However, the role of private enforcement is not consistently significant across all models. A plausible reason could be that advisory services are more important in public market financing such as the security underwriting business, where advisors need to present and advise on the regulatory policy recommendations and help prepare related submissions or verifications to public enforcers.

2. A comparison of public and private law enforcement

To confirm hypothesis (H3), I compare the *t*-statistics of the two different law enforcement regimes (see Tables 5.3 and 5.4). The *t*-statistics show that the two measures of law enforcement work in opposite directions; public law enforcement shows a consistent significant negative impact on reducing the financing cost of $(\frac{EV}{EBITDA})^{-1}$ (see Models 1, 5, and 6, Table 5.3) and is insignificantly correlated with advisory fees. I therefore accept hypothesis (H3) and conclude that public enforcement dominates private enforcement in reducing PE financing cost. My research regarding law enforcement further supports La Porta et al.'s (1998) finding using evidence from the private market. Although I hold a transaction cost-economising value that is different from that of La Porta et al. (1998), my results are consistent with theirs.

5.3. Informal Institutions

5.3.1 Innovative financing in LBO transactions

I apply the proportion of structured debt securities (*pct_Convertible, pct_Preferred and pct_CDS*) in each LBO financing deal as a proxy for an innovative financing vehicle and test their impact on financing cost. The results are presented in rows 5, 6 and 7, Table 5.1. I find significantly lower *WOY* of convertible debts (*pct_Convertible*). The observation of preferred shares (*pct_Preferred*) is dropped because of the large missing value. In regressing *ADVISORS* against the various types of debt securities, I did not find any had a significant impact (see Table 5.2). This finding implies that debt securities relying on the contractual settlement of insolvency risk do not incur significant advisory fees. I conclude that, in the case of bankruptcy, a contractual settlement between a debtor and debt holder(s) is comparatively cost-effective. This is especially true in countries where reorganisation is the first attempt or default settlement for insolvency. This result agrees with business practices, e.g., a creditor holding convertible bonds could simply choose not to convert his/her debt into equity when a business milestone is not attained as expected. A redeemable preferred shareholder in an LBO could choose to redeem the holding when certain events occur. In practice, low-cost convertible debts and redeemable preferred equity are issued to risk-averse institutional investors whereas most LBO debt securities invested by general partners (GPs) are high-yield unsecured debts. I accept hypothesis (H4a) that innovative financing instruments facilitate LBO financing by reducing offering yields.

I notice that *pct_Unsecure* is positively related to the higher financing cost of the *WOY* in Model 3, Table 5.1. Though it is reasonable that unsecured debt usually offers higher yields,

this cost is not borne by PE fund providers but by the PE managers[34]. As discussed in section 1.0, by using the technique of securitisation, PEs can facilitate LBO financing by broadening the scope of accredited social capital.

5.3.2 Analyst coverage in VC transactions

The estimated coefficients of analyst coverage (*ANA_COV).* in row 9, Table 5.3, show there is no significant correlation between *ANA_COV* and $(\frac{EV}{EBITDA})^{-1}$. I also find that the analyst coverage is positively correlated with *ADVISORS* (see Table 5.4). This finding is robust after controlling for the information environments of voluntary disclosure (*VOLUNTARY*) and media scrutiny (*MEDIA*) (see Table 5.9), which suggests the rejection of hypothesis (H4b). Although a few studies argue that analysts can help alleviate information asymmetry (Cumming, 2008; Manigart et al., 2002; Wright and Ken, 1998), there is no direct evidence that analyst coverage accounts for less financing cost from the enterprise view. My finding regarding analyst coverage agrees with the survey by Manigart et al. (2002) that the VCs increase the target firms' expenses to release influential soft information, such as prototyping, market presence and distribution channnels. My result suggests that, in the private placement market where more informed parties have privileged access to better investment opportunities, the motivation for analysts to improve information transparency is limited. My finding regarding analyst coverage is coherent with the disclosure-based private enforcement discussed in section 5.2.3.2. Based on my findings, I conclude that analyst coverage is not preferable for PEs and, even if it were, there will be costs from the enterprise's side. In reviewing the detailed deal comments provided by Zephyr, I find that the published deal

[34] As discussed in Chapter one, PE managers purchase most of the unsecured securities leaving the debts of higher seniority to accredited investors.

information is limited and is generally restricted to the basic information of managerial board, the acquired stake, and rumour dates (available upon request).

5.3.3 Social ties

I present the coefficients for the social ties of the number of registered professionals/employees (*PROFESSIONAL*) in row 8, Tables 5.1 and 5.2, the ultimate owner of the bank (*BANK*), government and university (*GOVT_EDU*), and individual PEs (*INDIVIDUAL*) in rows 10, 11 and 12, Tables 5.3 and 5.4. The estimated coefficient of *PROFESSIONAL* exhibits a negative relationship with *WOY* across all models in Table 5.1. This relationship holds in robustness test using *WAS* as the dependent variable (see Model 2, Table 5.7). There is no significant correlation between social ties and *ADVISORS*. The overall relationship between social network and financing cost in the LBO sample partially supports hypothesis (H5a).

To investigate the role of social ties in the VC sample, I focus on the business nature of the parent organisation. The estimated coefficients in Models 1 to 6, Table 5.3, suggest the acceptance of hypothesis (H5b). Consistent with previous studies (Manigart and Wright, 2013; Wright et al., 2005, 2006), I find that bank-backed and independent VCs are competitive bidders who offer higher valuations. In other words, they request lower capital returns from the entrepreneur. One notable finding is that university or government-backed enterprises pay significantly higher $(\frac{EV}{EBITDA})^{-1}$. A reasonable explanation is the lack of competitive bidders in that target investment niche. This is consistent with previous studies (Heughebaert and Manigart, 2012; Wright et al., 2006). Universities and governments have privileged access to their own start-ups or spin-outs. Appling the measurement of advisory fees, my results further reveal that university-backed or government-backed enterprises pay

lower advisory fees while searching for financing from their parent companies (see Table 5.4). A plausible reason is that such fund-searching projects are usually screened by academic or expert officers (Wright et al., 2006). As a result, there is less necessity for entrepreneurs to hire legal and financial agencies in cooperating with due diligence investigations by outside investors in PEs.

5.3.4 Age

Experience (*AGE*) exhibits different effects on the explicit costs in the LBO and VC samples. With the LBO sample, *AGE* is associated with a higher *WOY* (see Models 1, 2, and 4 in Table 5.1) and *ADVISOR*, with the former significant across Models 1, 3and 4 in row 9, Table 5.1. The coefficient of *AGE* in Model 1, Table 5.1 shows that one more year experience increases the *WOY* of LBO financing by 2.18%; in other words, 218 basis points. A plausible reason is that experienced PE professionals can market high-risk debt securities that offer a higher offering yield. This argument is consistent with Chang et al.'s (2013) study that finds that PEs are likely to focus on non-pricing services and have a weaker incentive to struggle through a "painful" pricing–adjustment process. In the VC sample, the estimated coefficient of *AGE* is not significantly associated with lower $(\frac{EV}{EBITDA})^{-1}$. However, Models 1 to 6 in Table 5.4, show that it is positively related at the 1% significance level to more *ADVISORS*. A plausible explanation for the higher advisory cost is that experienced VCs are skilled at complex contracts for which the target firms need more advisors to provide regulatory counselling on various issues. Thus, I reject hypotheses (H6a) and (H6b) and conclude that an experienced PE induces higher financing costs.

5.4. A Comparison of Formal and Informal Institutions

To verify the hypothesis (H7), I conduct the z-test for the two institutional variables groups. The results are presented in Table 5.5. The z-statistic suggests that, across all measures of financing cost, formal institutions dominate informal institutions in LBO deals. The z-statistic of formal institutions is significant at the 1% level. It is worth noting that law enforcement in both the LBO and VC samples exerts a significant impact on financing costs although working in opposite directions. The informal institution variables in both the LBO and VC samples are mostly insignificant. The exceptions are *pct_Convertible* in the LBO sample (consistently significant at the 1% level) and *GOVT_EDU* in the VC sample (consistently significant at the 10% level). Combining these findings, I reject hypothesis (H7).

The results for the formal and informal institutions are noteworthy and generate two important new findings. First, informal institutions account for higher explicit financing costs in non-formalised financing contracts. This is true for social ties with government and university in VC financing. The possible reason for the former outcome is that a VC financing contract is private that, in practice, could, to some extent, opt out of formal law enforcement. Scott (1995) argues that normative and cognitive institutions are more critical to professionals such as VCs. Conversely, informal institution innovative financing instruments (*pct_Convertible*) account for significant and consistently lower financing cost. It is worth noting that although the convertible securities have contingencies embedded (e.g., convertible rights, redeemable rights), they are, by their nature, securities traded on the over-the-counter (OTC) market. Using formalised innovative financing instruments, the desired financing conditions are less subject to private negotiation and thus account for lower financing cost.

Second, previous studies argue the rationale for target companies to choose external financing through PEs is that PEs are informed agents that can adjust to the formal institutional environment using contracts (Cao et al., 2013; Qian and Strahan, 2006). It is worth noting that the sophistication of PE professionals (see discussion regarding *AGE* in section 5.3.4) in LBOs results in higher *WOY*. My study provides new evidence for the intermediation equilibrium approach (Chan, 1983) by showing that PE managers do not provide a free service and the cost of financing through professional intermediaries is significant. My finding of an advisory fee in VC deals also suggests that contracting with the external shareholders of VCs, especially experienced shareholders, creates significant legal and accounting costs.

Table 5.5 The Z-test of Hypothesis（3H) and Hypothesis (7H)

$$Explicit\ Financing\ Cost_{\ LBO,i} = \alpha_0 + \beta_1 z'_{i,Creditor\ Rights} + \beta_2 z'_{i,Debt-\ Enforcement} + \beta_3 z'_{i,Informal\ Istitution} + \beta_4 z'_{i,Market+} \beta_5 z'_{i,Company} + \xi_i$$

Formal Institution			**z-Stats**
Law $\beta_1^{Creditor\ rights}$	Law enforcement $\beta_2^{\text{Foreclosure}}$		$\beta_1^{Creditor\ Rights} + \beta_2^{Foreclosure}$
-0.713* **	-2.605***		-3.8148***[35]
Informal Institution Innovation $\beta_3^{unsecure}$	Social ties $\beta_3^{employee}$	Age β_3^{age}	$\beta_3^{unsecure} + \beta_3^{employee} + \beta_3^{age}$
0.701	-0.000750**	0.0218*	-1.0983[36]

$$Explicit\ Financing\ Cost_{\ VC,i} = \alpha_0 + \beta_1 z'_{i,Shareholder\ Rights} + \beta_2 z'_{i,Law\ Enforcement} + \beta_3 z'_{i,Informal\ Istitution} + \beta_4 z'_{i,Market+} \beta_5 z'_{i,Company} + \xi_i$$

Formal Institution			**z-Stats**
Law $\beta_1^{Shareholder\ rights}$	Law enforcement $\beta_2^{Public\ enforcement}$ $\beta_2^{Pivate\ enforcement}$		$\beta_1^{Shreholder\ Rights} + \beta_2^{Public\ Enforcement} + \beta_2^{Private\ \ Enforcement}$
-1.970* **	1.54[38]		-1.624[37]
Informal Institution Active management$\beta_3^{analyst\ coverage}$	Social ties $\beta_3^{Gvt\_edu}$	Age β_3^{age}	$\beta_3^{analyst\ coverage} + \beta_3^{Gvt\_edu} + \beta_3^{age}$
1.029	3.525*	-0.00559	1.7019*[39]

Note: The z-statistics are computed following Lee et al. (2014) with ***, **, and * indicating significance at the 1%, 5%, and 10% levels, respectively.

5.5. Economic Efficiency Analysis

I now discuss the economic analysis of PE-backed financing. I apply the theoretical framework developed in section 2.7 to evaluate economic efficiency.

5.5.1 Distribution efficiency

My interpretation of the distribution efficiency of PE financing is driven by asset allocation of optimising value, from the perspective of fund-raising enterprises. I see PEs as financial

35 $\frac{\beta_i^{Creditor\ rights} + \beta_i^{Foreclosure}}{\sqrt{\left(SE_i^{Creditor\ rights}\right)^2 + \left(SE_i^{Fireclosure}\right)^2}} = \frac{-0.713 - 2.605}{\sqrt{(0.339)^2 + (0.801)^2}} = -3.8148$

36 $\frac{\beta_i^{unsecure} + \beta_i^{age} + \beta_i^{employee}}{\sqrt{\left(SE_i^{unsecure}\right)^2 + \left(SE_i^{age}\right)^2 + \left(SE_i^{employee}\right)^2}} = \frac{-0.701 + (0.00075) + 0.0218}{\sqrt{(0.619)^2 + (0.000294)^2 + (0.0121)^2}} = -1.0983$

37 $\frac{\beta_i^{shareholder\ rights} + \beta_i^{public\ enforcement} + \beta_i^{private\ enforcement}}{\sqrt{\left(SE_i^{shareholder\ rights}\right)^2 + \left(SE_i^{public\ enfrocement}\right)^2 + \left(SE_i^{private\ enforcement}\right)^2}} = \frac{1.97 + (-24.05) + 58.79}{\sqrt{(0.689)^2 + (8.778)^2 + (20.82)^2}} = -1.624$

38 $\frac{\beta_i^{Public\ enforcement} + \beta_i^{private\ enforcement}}{\sqrt{\left(SE_i^{public\ enforcement}\right)^2 + \left(SE_i^{private\ enforcement}\right)^2}} = \frac{-24.05 + 58.79}{\sqrt{(8.778)^2 + (20.82)^2}} = 1.5375$

39 $\frac{\beta_i^{analyst\ coverage} + \beta_i^{gvt\_edu} + \beta_i^{age}}{\sqrt{\left(SE_i^{analyst\ coverage}\right)^2 + \left(SE_i^{gvt\_edu}\right)^2 + \left(SE_i^{age}\right)^2}} = \frac{1.029 + 3.525 + (-0.00559)}{\sqrt{(1.621)^2 + (2.124)^2 + (0.0592)^2}} = 1.7019$

intermediaries who emerge to help fund-raising projects with a quality (q) to access the largest possible social capital thus promoting an equilibrium set of φ (p, q). In this process, PEs hold a '*1-p*' proportion of the fund that is generally contracted with embedded contingencies to secure a risk-return optimisation for the fund providers. On the empirical front, the financial intermediary role is significant since the settlement of such financing contracts involves taking advantage of exemptions in laws and speculating investment opportunities (Kolb et al., 2011)[40]. To prove the above proposition, I use the data on LBO transactions and rerun my regression with the number of buyers and transaction size as the dependent variables. The results are presented in Table 5.6. I find that unsecured debt (*pct_Unsecure*) significantly accounts for a larger buyer group with each holding a smaller piece of debt (see columns 5 to 8, Table 5.6). This suggests that the issuance of innovative debt securities leads to a larger group of fund providers (γ) who invest through a PE. However, there is concern that these investors can be questioned about their accreditation and sophistication. This concern was previously documented in detail in the review of Regulation D (Campbell Jr, 1985; Warren III, 1983). Instead of interpreting an innovative financing contract (those with the convertible rights, redeemable rights or subordination) as a "credit enhancing mechanism" (as many marketing brochures did), this study views it in the same way as Courtois (2009) who notes that innovative financing contracts mainly serve the purpose of *market-reaching*. I argue that credit risk cannot disappear but can only be distributed piecemeal (a larger group of investors with each holding a smaller size of risky assets) or is held until the market turns around (issuing risky securities under good market conditions).

[40] Using the US as an example, there are two issuance exemptions (section 4(2) and Regulation D) and two resale exemptions (section 4(1) and Rule 144). One notable exemption in Regulation D is that certain offers and sales can be made to an unlimited number of accredited investors and up to 35 "non-accredited" investors (Schwieger, 2007). With such an exemption, the issuers have reason to believe the investor is accredited so long as they use "reasonable care".

Table 5.6 The Test Distribution Efficiency Using the LBO Sample

VARIABLES	Transaction size							
	Smaller buyer group (less than 50% quartile)				Bigger buyer group (larger than 50% quartile)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
CREDITOR	0.0810*				-0.0648			
	(0.0464)				(0.108)			
FORECLOSURE		0.243*				-0.643**		
		(0.139)				(0.249)		
LIQUIDATION			-				1.082***	
							(0.108)	
REORGANISATION				-0.243*				-0.0997
				(0.139)				(0.290)
Pct_Unsecure	1.399*	1.399*	1.531*	1.399*	-0.302***	-0.322***	-0.237***	-0.274***
	(0.804)	(0.804)	(0.777)	(0.804)	(0.0813)	(0.0809)	(0.0814)	(0.0826)
PROFESSIONAL	-0.000341	-0.000341	-0.000392	-0.000341	-	-	-	-
					0.000948***	0.000984***	0.000937***	0.000929***
	(0.000424)	(0.000424)	(0.000399)	(0.000424)	(0.000148)	(0.000151)	(0.000138)	(0.000145)
AGE	-0.00173	-0.00173	-0.00234	-0.00173	0.0158***	0.0162***	0.0163***	0.0156***
	(0.00194)	(0.00194)	(0.00183)	(0.00194)	(0.00187)	(0.00180)	(0.00190)	(0.00191)
MARKET	0.0187	0.0187	0.00424	0.0187	-0.0422	-0.0608*	-0.0126	-0.0278
	(0.0509)	(0.0509)	(0.0455)	(0.0509)	(0.0340)	(0.0351)	(0.0333)	(0.0351)
BENCHMARK	-0.172***	-0.172***	-0.176***	-0.172***	-0.0450***	-0.0463***	-0.0424***	-0.0437***
	(0.0369)	(0.0369)	(0.0367)	(0.0369)	(0.00694)	(0.00687)	(0.00634)	(0.00692)
Constant	7.857***	7.649***	7.329***	7.164***	2.619***	2.987***	2.765***	3.167***
	(0.183)	(0.152)	(0.180)	(0.188)	(0.884)	(0.723)	(0.702)	(0.581)
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	77	77	77	77	92	92	92	92
R-squared	0.372	0.372	0.371	0.372	0.389	0.398	0.389	0.398

Note: This table presents the result of the robustness test I apply to the OLS model. I regress the transaction size from both the smaller buyer group and bigger buyers group against the aggregated creditor rights index and three litigation dummy of creditor rights (natural logarithm of deal value). Robust standard errors clustered at the firm level are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively

Our investigation of implicit financing costs and the advisory fees of VC financing is consistent with the previous studies by Cumming and Johan (2009), Manigart et al. (2002) and Wright and Ken (1998). My argument is that VCs, in their efforts to screen and monitor target investable firms, generate monopoly profit. Such monopoly profit could take the form of a lower bidding price that results in higher financing cost from the enterprise's side. This is especially true in government and university-backed VCs. Monopoly profit could also incur significant advisory fees from the enterprise's side that searches for agent financing through experienced VCs. By examining the implicit cost and its correlation with the informal institutions of social networks and reputation binding, I provide evidence for the theoretical

prediction of Chan (1983) (see section 2.4.2). I show that, given the capital resource distribution set of *(p, q)*, the demand side of PE would expect a fee level (*d)* that is likely to deviate from the optimal level. Like Diamond (1984), financing through an intermediary is Pareto-optimal only when the entrepreneur retains an expected return at least as high as he/she would by sidestepping intermediaries to contract directly with the depositors.

5.5.2 Information efficiency

In this study, I use VC-backed financing as a sample to explore the role financial intermediaries play in improving information efficiency in the private market. My result is consistent with the existing finance literature. Finance studies of information efficiency generally aim at fair asset pricing since the price serves as a signal of asset value. I find that information transparency, which is enforced through the formal institution of public enforcement or independent media, reduces the risk premium bid by PEs. Compulsory information disclosure (*COMPULSORY*) through the stock exchange exhibits a significant impact on $(\frac{EV}{EBITDA})^{-1}$ (see the robust test, row 5, Table 5.9). This supports the argument that more signalling precision makes the price more informative about the invested firm/project (Harris et al., 2014). I conjecture that information efficiency increases the utility of the given combination of $\{(p_1, q_1); (p_2, q_2); \cdots (p_k, q_k)\}$in a competitive intermediation (*CI*) world.

My argument is for an efficiency gauge in the assumption that financial intermediaries should be the lowest cost information provider in an optimal market (Grossman and Hart, 1980). There is concern that an intermediary that results from information asymmetry deviates from the optimal level and serves as the proxy for efficiency loss. According to Chan (1983), search cost from both the investor side μ and the enterprise side *d* consists of a fee for a given distribution of sets *(p,q).* In this empirical study, although I could not solve the optimal level

of intermediary costs, I could conclude, with confidence, that there is a significant relationship between information disclosure and advisory fees.

Our finding regarding information efficiency extends the existing literature in two ways. First, information asymmetry in the private placement market is favourable for PE professionals because it is from where abnormal returns or speculative gains come. Second, my finding regarding public law enforcement and the information environment indicates that individual, third-party information disclosure – as a public good – is socially optimal for improving the financing cost for entrepreneurs. Conversely, because the information in a private placement is not subject to mandatory disclosure regulations, PEs are better off withholding information of investment opportunities. Their disclosure effort is less likely to be motivated by a socially optimal purpose but is more likely self-serving (e.g., soliciting investors for later financing rounds) (Cumming, 2008; SSBCI, 2014). Considering the information producing cost borne by enterprises, my argument is that such disclosure is not socially desirable.

5.5.3 Governance efficiency

Revisiting the results of the VC sample in Table 5.3, among the three formal legal indices I find strong evidence that relief from the proxy voting restriction significantly reduces the explicit financing costs for target firms. The same is also true for the bylaw on voting policy. This finding agrees with the assertion by Deangelo and Deangelo (1985) and La Porta et al. (2000) that voting rights affect investors' valuation of target firms. My study concerning governance efficiency highlights the voting policy remedy of agent problems in PE financing.

Further, I expect that successful execution of voting rights is also subject to the control level of VCs because they need certain control rights to monitor the target companies and to track

their business potential although they do not obtain majority control in the early stage. The subsequent alignment of cash flow or profit can be achieved through control exercised by VCs over the appointment of executives and in overseeing the implementation of the strategy of the target company (Walker, 2000). I note that two sticks of minority-friendly shareholder rights, class action and oppressed mechanism, are less favourable for PEs. A plausible reason is that in the post-investment stage, changes in the bylaw such as the company code and voting policy could be proposed by GPs and the directors. Such changes could work in favour of GPs or the target enterprise, depending on the bargaining power of the parties and the country-level usual practice and trends.

5.6. Conclusions

In the final analysis, my findings suggest that stronger protection of creditor and shareholder rights, as well as better law enforcement, account for lower explicit financing costs. Judicial efficiency, however, can be associated with a higher implicit cost of advisory fees. Informal institutions interact with formal institutions positively or negatively and create secondary effects on economic outcomes. I find a consistent correlation between years of business and higher financing cost in both the LBO and VC samples. This suggests that reputation bonding is still significant around regulatory barriers and induces economic inefficiency.

Table 5.7 Robustness Test Using Different Dependent Variables with the LBO Sample

VARIABLE	1st stage	2nd stage			
	$\widehat{Ln(TRANSACTION)}$	(1) WAS	(2) WAS	(3) WAS	(4) WAS
CREDITOR	-0.341***	-57.16**			
	(0.121)	(25.24)			
FORECLOSURE			-189.2***		
			(49.37)		
LIQUIDATION				10.62	
				(26.60)	
REORGANISATION					101.9**
					(42.31)
Pct_Unsecure	-0.558***	-46.00	-17.14	93.13**	34.52
	(0.0906)	(71.03)	(38.32)	(43.39)	(36.47)
Pct_CDS	1.205***	244.1	171.5**	-66.27	69.95
	(0.143)	(155.5)	(76.27)	(81.63)	(60.28)
Pct_Convertible	0.283	384.2***	376.5***	311.8***	339.0***
	(0.181)	(52.07)	(38.24)	(31.25)	(30.25)
PROFESSIONAL	-0.00154***	-0.297	-0.246**	0.0771	-0.0961
	(0.000299)	(0.194)	(0.123)	(0.110)	(0.0857)
AGE	0.0133***	2.393	1.672**	-0.742	0.469
	(0.00173)	(1.586)	(0.706)	(0.887)	(0.647)
MARKET	-0.140***	-46.79**	-42.22***	-7.183	-26.75**
	(0.0307)	(19.26)	(13.19)	(13.85)	(10.92)
$Ln(\widehat{TRANSACTION})$		-181.4	-128.4***	65.75	-31.94
		(117.3)	(48.99)	(73.54)	(43.02)
Constant	8.448***	1,679*	1,244***	-222.5	435.0
	(1.115)	(880.8)	(381.8)	(549.1)	(294.6)
Observations	125	125	125	125	125
R-Squared	0.629	0.169	0.337	0.327	0.413
Industry	Yes	Yes	Yes	Yes	Yes
1st-Stage F Stat	19.36***				
Wald F Stat		9.570	11.25	6.523	31.46
Hansen J		0.0265	1.241	6.446*	3.169

Note: This table presents the results of the 2SLS test using the LBO sample. I regressed the explicit financing cost of the WAS on aggregated creditor rights index and three debt enforcement dummies (foreclosure, liquidation and reorganisation) against explicit financing cost of the WAS. I addressed the endogeneity concern of target firm size (natural logarithm of deal value). The first stage regression is reported in the left-end column (only the first-stage result of the creditor rights index is reported). The instrument variables are Legal Rights Index, Financial through Local Market, Availability of Financial Services and Regulation of Securities Exchanges (Schwab and Sala-I-Martin, 2010; 2015). The second stage is regressed using the estimated transaction size given in columns1 to 4. Robust standard errors clustered at the firm level are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

Table 5.8 Robustness Test Using Different Dependent Variables with the VC Sample

VARIABLE	1st stage	2nd stage					
		(1)	(2)	(3)	(4)	(5)	(6)
	$Ln(\widehat{TARGET\_SIZE})$	$(EV/Revenue)^{-1}$	$(EV/Revenue)^{-1}$	$(EV/Revenue)^{-1}$	$(EV/Revenue)^{-1}$	$(EV/Revenue)^{-1}$	$(EV/Revenue)^{-1}$
SHAREHOLDER	-0.0263	-5.013**					
	(0.226)	(2.466)					
Proxy_voting			-10.62**				
			(4.213)				
Ownership_limit				5.673			
				(4.990)			
Class_action					4.011		
					(18.11)		
Voting_policy						-7.348	
						(5.131)	
Oppressed							20.17
							(22.88)
PUBL_ENFORCEMENT	0.506	-53.62	10.76	51.73	-1.509	-37.78	-31.23
	(0.598)	(35.36)	(23.65)	(51.37)	(24.51)	(35.70)	(45.02)
PRIV_ENFORCEMENT	0.0336	139.5**	88.09**	10.79	34.45	104.1*	91.73
	(0.833)	(57.72)	(43.82)	(58.15)	(61.43)	(58.84)	(72.41)
ANA_COV	-0.0519	-7.599	-6.201	-10.41	-9.292	-8.361	-9.782
	(0.220)	(11.35)	(11.29)	(11.03)	(11.70)	(11.44)	(11.17)
BANK	-0.0101	-11.18	-13.14	-11.81	-10.96	-11.51	-12.18
	(0.240)	(12.88)	(13.11)	(12.80)	(12.81)	(12.91)	(12.96)
GVT_EDU	-0.193	30.67*	26.41	26.27	28.61	29.26	27.14
	(0.274)	(18.08)	(17.07)	(17.67)	(18.08)	(17.94)	(17.60)
INDIVIDUAL	-0.317	-11.81	-13.27	-12.04	-12.06	-12.02	-12.86
	(0.204)	(11.29)	(11.27)	(11.35)	(11.61)	(11.32)	(11.34)
AGE	0.00395	-0.00131	-0.00649	-0.0295	-0.0140	-0.00109	-0.00641
	(0.00936)	(0.0559)	(0.0548)	(0.0516)	(0.0537)	(0.0559)	(0.0549)
$Ln(\widehat{TARGET\_SIZE})$		-0.889	-0.683	0.173	-0.0877	-0.642	-0.185
		(3.210)	(3.194)	(3.351)	(3.242)	(3.217)	(3.216)
MARKET	0.987	203.4**	213.7**	209.7**	207.0**	205.8**	209.1**
	(1.476)	(84.51)	(85.16)	(84.03)	(84.09)	(84.39)	(84.31)
STAKE	0.0106**	0.405	0.384	0.401	0.429	0.419	0.432
	(0.00460)	(0.308)	(0.296)	(0.320)	(0.330)	(0.310)	(0.314)
Constant	2.808***						
	(0.524)						
Observations	232	181	181	181	181	181	181
R-Squared	0.498	0.283	0.295	0.278	0.272	0.278	0.276
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stage	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1st-Stage F Stat	13.31***						
2nd-Stage F Stat		3.566	3.369	3.117	3.094	3.281	3.566
Wald F Stat		94.39	84.06	94.27	72.87	92.83	94.87
Hansen J		0.140	1.509	2.93e-05	0.389	0.0529	0.0461

Note: This table presents the results of the 2SLS model using the VC subsample. I regressed alternative measures of financing costs of $(EV/Revenue)^{-1}$ on the shareholder rights index and law enforcement dummies. I addressed the endogeneity concern of target firm size (natural logarithm number of the employees). The first stage regression is reported in the left-end column (only that of the aggregated shareholder rights index is reported). The instrument variables are index of Indulgence versus Restraint (Hofstede, 2015) and revenue of target firm from Zephyr (not reported here). The second stage is regressed using the estimated target size given in columns 1 to 6. The robust standard errors clustered at the firm level are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

There are several highlights in my results. For example, in reducing the financing cost of distressed or restructuring businesses like LBO deals, creditor rights with a socially optimal value of a "going concern" value dominates the liquidation value. For shareholder rights, the voting rights, among all sticks of shareholder rights, ensure a predictable alignment of cash flow or profit from investees thus encourages LPs to offer higher enterprise multiples thereby lowering the financing cost from the enterprise side. I note that network ties in VC-backed deals account for the economics of information transparency. However, such a knowledge

advantage raises monopoly profit for VCs that, in turn, increases the financing cost of fund-searching enterprises. However, within some disclosure activities, analysts' coverage does not alleviate information asymmetry when the information monopoly is the main source of PEs' speculative profit. I also find that PEs in LBOs help the borrower obtain easier access to social capital at a lower cost by introducing innovative financing vehicles (in my case, the convertible bond). However, anecdotal evidence suggests that using innovative debt securities raises the leverage to a level that is too high, which could hurt the economy[41]. In the real business world, even the most experienced PEs[42] could fail in such highly leveraged deals.

With the empirical confirmation of my research hypotheses, I now proceed to the study's conclusion. In Chapter six, I review my results and discuss the four research objectives of the study. The chapter concludes with the practical implications and possible future study.

[41] It has been reported that 40% of the US private equity deals exceed the recommended debt levels. The largest four LBOs also failed. News retrieved from https://www.thebalance.com/lbo-leveraged-buyout-definition-threat-3306080.
[42] For example, the Harman deal brokered by KKR and Goldman Sachs in 2007 (Damodaran, 2008).

Table 5.9 Robustness Test of the Explanatory Variables of Information Disclosure

	1st stage	2nd stage					
Dependent Variable	$Ln(\widehat{TARGET\_SIZE})$	(1) $(\frac{EV}{EBITDA})^{-1}$	(2) $(\frac{EV}{EBITDA})^{-1}$	(3) $(\frac{EV}{EBITDA})^{-1}$	(4) $(\frac{EV}{EBITDA})^{-1}$	(5) $(\frac{EV}{EBITDA})^{-1}$	(6) $(\frac{EV}{EBITDA})^{-1}$
SHAREHOLDER	-0.0263	-2.013***					
	(0.226)	(0.731)					
PUBL_ENFORCEMENT	-0.112	-24.80***	3.388	33.39	-5.509	-18.41***	-16.55**
	(4.349)	(9.091)	(4.263)	(20.43)	(4.436)	(7.041)	(6.665)
PRIV_ENFORCEMENT	-1.048	59.30***	22.03**	-13.32	-18.76	45.57***	39.90**
	(3.948)	(21.38)	(10.64)	(14.63)	(14.39)	(16.86)	(15.70)
ANA_COV	-0.00612	0.977	0.778	0.117	0.834	0.988	0.781
	(0.327)	(1.574)	(1.571)	(1.589)	(1.541)	(1.575)	(1.571)
COMPULSORY	-0.201	-6.218**	-5.874**	-4.279*	-5.279**	-6.232**	-5.879**
	(1.431)	(2.519)	(2.499)	(2.569)	(2.615)	(2.521)	(2.499)
VOLUNTARY	-0.310	-1.573	-1.334	-0.685	-1.621	-1.588	-1.337
	(0.329)	(1.374)	(1.403)	(1.564)	(1.414)	(1.373)	(1.403)
MEDIA	0.0557	-0.635	-0.671	-0.646	-0.441	-0.632	-0.671
	(0.200)	(1.027)	(1.030)	(1.034)	(1.019)	(1.027)	(1.030)
BANK	0.174	0.286	0.188	-0.0367	0.368	0.292	0.189
	(0.338)	(1.824)	(1.811)	(1.777)	(1.812)	(1.825)	(1.811)
GVT_EDU	-0.449	3.625*	3.622*	3.958*	4.150*	3.629*	3.622*
	(0.386)	(2.118)	(2.099)	(2.065)	(2.164)	(2.119)	(2.099)
INDIVIDUAL	-0.378	-1.372	-1.433	-1.366	-1.005	-1.366	-1.433
	(0.329)	(1.581)	(1.599)	(1.622)	(1.540)	(1.579)	(1.598)
AGE	0.00395	-0.00131	-0.00649	-0.0295	-0.0140	-0.00109	-0.00641
	(0.00936)	(0.0559)	(0.0548)	(0.0516)	(0.0537)	(0.0559)	(0.0549)
$Ln(\widehat{TARGET\_SIZE})$		-0.0468	-0.0376	0.0464	0.0414	-0.0467	-0.0378
		(0.499)	(0.498)	(0.489)	(0.481)	(0.499)	(0.498)
MARKET	1.819	11.98	10.36	7.042	13.97	12.09	10.38
	(1.917)	(10.46)	(10.35)	(10.18)	(10.91)	(10.47)	(10.35)
STAKE	0.00232	0.0516	0.0502	0.0505	0.0581*	0.0517	0.0502
	(0.00668)	(0.0332)	(0.0333)	(0.0352)	(0.0344)	(0.0332)	(0.0333)
Constant	4.597**						
	(1.922)						
Observations	232	181	181	181	181	181	181
R-Squared	0.498	0.283	0.295	0.278	0.272	0.278	0.276
Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Stage	Yes	Yes	Yes	Yes	Yes	Yes	Yes
1st-Stage F Stat	14.58***						
2nd-Stage F Stat		2.162	2.097	1.566	1.809	2.159	2.162
Wald F Stat		32.24	36.58	43.14	38.76	31.95	32.24
Hansen J		0.275	1.045	3.166	1.895	0.215	0.275

Note: This table presents the results of the 2SLS model using the VC subsample. I regressed the different variables of information environment against$(\frac{\text{EV}}{\text{EBITDA}})^{-1}$. I addressed the endogeneity concern of target firm size (natural logarithm number of the employees). The first stage regression is reported in the left-end column (only that of the aggregated shareholder rights index is reported). The instrument variables are the index of Indulgence versus Restraint (Hofstede, 2015) and revenue of target firm from Zephyr (not reported here). The second stage is regressed using the estimated target size given in columns 1 to 6. The robust standard errors clustered at the firm level are in parentheses. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

CHAPTER SIX

Conclusions

6.1. Introduction

Section 6.2 reviews the significance and methodology of the study. Section 6.3 summarises the empirical findings and suggests the policy implications to be drawn from them. Section 6.4 discusses the limitations of the study, before recommending possible future research avenues in section 6.5.

6.2. Study Review

The literature enhanced my understanding of the links between the institutional environment and financing activities. However, there is no closed-form of the link across all types of financing activity. The uniqueness of PE-backed financing lies in the PEs complex funding model. PEs are hybrid financing institutions of “commercial bankers” (deposit-lenders) and “merchant/investment bankers” (underwriter-dealers). The PE professionals aim to provide funds for high-risk businesses through a variety of innovative funding vehicles. The growth of the PE market raises the need to investigate the favourable institutional environment where PE innovates its way around regulatory barriers and develops a business practice to speculate in investment opportunities. The emphasis of my study goes well beyond answering the question of PE financing efficiency; it develops the first and second order reason to explore its universal applicability in the ever-evolving alternative financing phenomenon.

In this study, I collected data from two subcategories of PE-backed deals, venture capital (VC) and leveraged buyout (LBO), around the world. I investigate deals with information dating back to the 1970s. I compare and analyse the financing cost of a sample of PE-backed deals and examine their correlation with the institutional environment. My study fills a gap in the literature and generates policy implications.

Because PE is itself a product of the specialisation of financial markets, like accountants and lawyers acting as financial intermediaries (Sahlman, 1990), PE financing services should be more cost-economic than if the target company searches for funds elsewhere. Holding this view, I judge the fair pricing of a PE's services based on a nation-wide economy. I measure explicit and implicit financing costs. My sample comprises 486 LBO deals and 2,998 VC deals. The LBO data were obtained from CapitalIQ, and the VC data were from Zephyr. The LBO sample covers from 1970 whereas the VC sample covers only those since 1997. The financing cost of the LBO sample is the weighted average offering yield of debt securities whereas the VC sample is the reciprocal of the enterprise multiple offered by the VCs.

The institutional environment I examine includes formal and informal institutions. The former refers to the legal environment. The legal index of creditor rights and debt enforcement are applied in specific PE-backed deals of LBO financing; shareholder rights and law enforcement are applied in VC-backed deals. I obtain the index of creditor rights from Djankov et al. (2007). The debt enforcement index is the insolvency litigation procedure (Djankov et al., 2008; La Porta et al., 2000). Shareholder rights were manually composed using a newly issued survey of shareholder rights by CFAI (2013). I obtained the law enforcement index from La Porta et al. (2006). The other category of institutional environment I examine is informal institutions. I explore the issuance of innovative debt

instruments in LBO deals, the analyst coverage in VC-backed deals, and the social ties and years of business in both the LBO and VC deals.

I regress the comprehensive observations of explicit financing cost detected from both LBO and VC financing against the target formal and informal institutions. I apply a two-stage least squares regression using the instrumented regressor to account for deal-size heterogeneity that may contribute to an endogeneity problem for my findings. In testing the implicit financing cost of advisory fees against institutional variables in LBO and VC samples, I do not address the endogeneity of transaction size or target size because it was not a concern as I previously conjectured. Analysis of the model specification in Section 5.1 indicates that each model has decent explanatory power. The robustness checks in Chapter five also suggest that my findings are robust to alternative independent variables and different sample composition. Table 6.1 summarises the empirical conclusions of this study.

Table 6.1 A Summary of the Results and Hypotheses Tests

	Hypothesis	Decision
H1a	LBO financing enjoys a lower weighted average yield and intermediary fees in countries with higher creditor rights standards.	Partially supported
H1b	VC financing enjoys a lower enterprise multiple and intermediary fees in countries with higher shareholder rights standards.	Supported
H2a	Law enforcement reduces the LBO weighted average yield and intermediary fees.	Not supported
H2b	Law enforcement reduces VC financing costs (reciprocal of enterprise multiple) and intermediary fees.	Not supported
H3	Public enforcement dominates private enforcement in reducing financing costs in VC-backed transactions.	Supported
H4a	In LBO financing, there is a negative correlation between innovative financing tools and weighted average yield and intermediary fees.	Supported
H4b	In VC financing, there is a negative correlation between analyst coverage and financing cost (reciprocal of enterprise multiple) and intermediary fees.	Rejected
H5a	LBO managers with larger social network offer lower weighted average yield but charge higher intermediary fees.	Partially supported
H5b	VC managers' affiliations with financial institutions offer a higher VC enterprise multiple and charge lower intermediary fees.	Supported
H6a	Older PEs help to reduce the LBO financing cost (weighted average yield) but charge higher intermediary fees.	Rejected
H6b	Older PEs help to reduce the VC financing cost (reciprocal of enterprise multiple) but charge higher intermediary fees.	Partially supported
H7	Informal norm plays a more important role in reducing financing cost in both LBO and VC transactions.	Rejected

6.3. A Summary of the Findings of the Research Objectives

6.3.1 Research objective one

In this study, I point to a generic approach to assess financial intermediaries, i.e., the financing cost from the fund demand-side. The empirical result shows that using financing cost as a fair standard to judge the efficiency of a financing activity is not only mathematically possible but also economically meaningful. For a number of reasons, I expect the cost-economy standard can be generalised and further developed to a wider range of financing intermediaries.

First, as discussed in section 2.4.2.1, because of the complexity of the PE business model, the intermediary equilibrium approach is the most adaptable approach compared with the asset class and principal approaches. The financial intermediary approach looks at a bigger picture of the wide economy where all participants work towards the end of social well-being, such as entrepreneurship, productivity, information transparency, employment and innovation. It does not serve the one-party interests such as limited partners, PE fund unitholders or PE professionals. As a result, the intermediary equilibrium approach serves as a fair standard to judge the appearance and legitimacy of any financing process over time. Second, the emergence of any financing intermediary is associated with specialisation of the financial markets (Rajan and Zingales, 2003). In the process of specialisation, the costs in the transaction of services and products between specialities arise. A cost-economy rule can be easily applied to judge the new financing intermediaries such as crowdfunding, peer-to-peer financing and other forthcoming financial intermediaries. Third, transaction cost is viewed as having great value and deserves further development in the ever-evolving financing activities (Collins and Fabozzi, 1991; Lesmond et al., 1999). The literature provides a parameter framework to measure the cost, such as search cost μ or fee level of d, induced by financing

through intermediaries (Chan, 1983). In this study, I conduct a number of trials to judge distribution, information and governance efficiency in all stages of PE-backed financing. It would be worth further investigating the wider area of economic efficiency proposed by classical theories such as allocation efficiency (Markovits, 1975), productive efficiency (Samuelson, 1962) or Pareto efficiency (Pareto, 1902; 1916).

6.3.2 Research objective two

The substitution hypothesis of financing cost in my study consists of both explicit and implicit costs. I provide measures of explicit financing cost from the demand-side of PE-backed firms to enhance my understanding of the economic role of PE. I also introduce the implicit costs paid to consultants, lawyers and accountants, often excluded from existing studies that can be significant for PE-backed firms in the real business world. I acknowledge that this explicit and implicit motivation raises two distinct measures of cost that do not consistently correspond to tested institutional factors. Furthermore, unlike the explicit cost, which is a number, the implicit cost takes the form of advisory fees. This variable design precludes us from aggregating the overall financing cost of PE-backed firms. There is a concern that when one institutional factor is significantly correlated with both cost measures with opposite signs, I could not make a conclusive judgement of my hypothesis. However, my overall results, with one exception, are unambiguous. In my LBO sample, creditor rights are negatively related to offering yield but, at the same time, positively related to advisory fees. Both cases are consistently significant. Apart from this, all other study hypotheses are confirmed.

6.3.3 Research objective three

The third research objective examines a comprehensive spectrum of the institutional environment that presumably shapes the PE business practice and economic outcomes. My examined institutional features are significant regarding their diverse geographic span. Using country borders as the determinant of the institutional environment, my sample covers distinct regions of the world, Asia Pacific, the US, and the EU. However, emerging markets such as China, Brazil, and Russia, are rarely covered in existing studies. My examined institutional features are specific in their socially optimal value. I examined three distinct preferences of debt enforcement procedures before judging the impact of creditor rights on restructuring LBO business deals. For shareholder rights, I decomposed the bundle of rights into sticks and analysed the effect of each stick separately. The analysis of law enforcement also raises an important view that the legitimacy of rights and successful claims over the same rights are two different things. Even if the legal rights are delineated, the claim for and enforcement of the rights could raise costs.

6.3.4 Research objective four

Research objective four generates a series of critical informal institutional features that determine the overall financing cost. I provide novel evidence of a normative, cognitive institution that presumably shapes the PE professionals' business practice. Based on a norm of PE-expected professional settings, I find that financing through intermediaries is not cost effective in all the areas, such as information gathering or search efforts, as proclaimed in existing studies (Fama, 1985; Mayer, 1988; Myers and Majluf, 1984). Specifically, my test of the hypothesis (H4a) shows that PEs' search efforts facilitate high-risk businesses (start-ups, SMEs, distressed business) to gain access to a broader scope of social capital. However, I cannot generalise this efficiency to other areas such as information gathering. The rejection of

hypothesis (H4b) suggests VCs are less motivated to improve the information asymmetry since they are brokers of information and can extract rent for intermediary services (Blyler and Coff, 2003; Toms et al., 2015). As a financial intermediary becomes more complicated, there will be new norms established that will exhibit appropriateness. I propose that a norm is a proven efficiency as far as it serves the cost-economy approach. In my examination of the cognitive institution of social network and years of business, I find reputational bonding and knowledge advantage explains the higher explicit financing cost. Such diseconomies could not be easily mitigated because the social network is based more on personal relationships than formal authority (Burt, 2009). The cognitive institution differs from a normative institution in that the former is an objective working at all societal levels and dominates all economic departments including financial markets.

6.4. Implications

In theoretical implications, I advance the literature with two predictions. First, law enforcement matters significantly in the *completed* part of the contracts leaving the *incomplete* part enforced by informal institutions. Second, additional costs compromise the judicial efficiency of legal rights. The cost associated with a claim of legal rights can be significant even though the protection of such rights is clearly delineated.

My investigation of distribution efficiency highlights the importance of the self-discipline of financial intermediaries, especially those in the centre of the social network. This finding is important to investors. In a private financing contract, PEs are the more informed party that is expert in taking advantage of exemptions in laws and speculating on investment opportunities. When drawing up a contract with sophisticated investors in PEs, one should

expect additional advisory fees not only at the contracting stage but also at the enforcement stage.

My study also has important implications for government, regulatory organisations, licensing agencies and professional associations. First, as markets innovate their way around regulations, I expect new financing intermediaries such as peer-to-peer lending, crowd-funding, and other unknown forthcoming intermediaries, to emerge to serve SMEs, start-up ventures or distressed enterprises. It will be of particular interest for policymakers to promote or enforce standardised deal language (including a deal pricing model such as EV/EBITDA) because it signals social capital with deal information. Meanwhile, the financing cost is lower using standardised contractual settlements (such as debt securities in LBO deals) compared with tailoring contingencies. This is because negotiating and enforcing the latter are both costly and more likely subject to moral hazard or other ethical problems.

The concern of potential costs also raises the need for a professional association to promote a higher level of prudential standard for financial intermediaries in a less-regulated market. The informal institution of networking and reputation bonding is difficult to address in the short-term, which is the reason government intervention is required. Laws or regulations can impose liability on equity investors (in most cases; GPs are mostly incorporated in a limited liability partnership) for the loan taken by a firm, especially those looking for mergers and acquisitions or restructuring through leveraged buyouts. This would discourage aggressive leveraging thereby improving the PEs' scrutiny. To better match the social capital and investment opportunity, financing ease should be given to projects that promote economic wellbeing such as innovation and employment.

Finally, my study highlights the need for the "public good" to break down the monopoly rents in net banking. One example of public good I propose is a government-backed PE fund. Examples from Canada, Australia, Israel, the UK and the US (Barkoczy, 2009; Colombo et al., 2016; Cumming, 2007) show that such financing vehicles add value to the national economy by various means. Another public good I propose is information disclosure. Based on my results, compulsory disclosure is more optimal than analyst coverage.

6.5. Limitations of the Study and Avenues for Further Research

This study has several limitations. First, my study includes institutional indexes with different time regimes. The creditor rights index was developed in 2006, and the shareholder rights index is based on a 2013 survey. The law enforcement index is from the study by La Porta et al. (2006). I do not consider the amendment of La Porta et al.'s (1997) work by Spamann (2010) because the revision is restricted to the anti-director index part and not that of law enforcement. The index instrument variables are from Schwab and Sala-i-Martin (2010; 2015) and Hofstede (2015). Given that my PE financing samples cover over 40 years, there is a concern that my data are subject to the limitation of a time-regime mismatch. However, the time regime bias should not be a critical concern in my study. Culture values are extremely stable over time; it takes decades for cultures to shift. Even so, the rankings among cultures remain intact (Hofstede et al., 2011).

Secondly, in our LBO sample, I do not differentiate between the straight bond and those embedded with options whose financing cost may be better assessed using option adjusted spread (OAS) and not offering yield. Since my study has a distinct focus on the financing cost, in my study of LBO financing, the offering yield at issuance in the primary market, I do not consider the *ex-post* performance of bonds in the secondary market where OAS is widely

used to judge the fair-pricing of the option-embedded bond. Admittedly, there can be a difference between the spread (comparable *z*-spread of an option-free bond) and OAS. However, such a difference, as widely acknowledged in all financing tools, is the main source of gain or loss that investors' speculate. Considering that such differences determine the attractiveness of the bond, the OAS is not as important to bond issuers as it is to bond investors who are, however, not the target of my study. Nevertheless, I acknowledge that pooling straight bonds and option-embedded bonds distorts my main results. Unfortunately, data that would enhance the study's analysis are not available.

Thirdly, the specification of my statistical regression can be substantially improved through better choice of an instrument variable. One alternative is culture dimension measures from Tang and Koveos (2008). In Tang and Koveo's (2008) work on cultural dimension, the sample countries cover a larger scope including developing countries that Hofstede (2015) did not consider. As a robustness test, I use long-term orientation versus short-term normative orientation (*LTO_TK*) and power distance index (*PDI_TK*) and reran Model 3.3b. My main findings remain unchanged after replacing the instrument variables. However, the Models do not satisfy all specification criteria and hence are not reported here.

Fourth, a number of my VC and LBO deals are cross-border transactions. Admittedly, when looking into international transactions, one should consider institutional factors from both the buy- and sell-side. The comparison of these factors, especially the legal variables, helps to explain a variety of deal dimensions such as deal volume and pricing (Cal et al., 2015; Wang and Wang, 2012). More importantly, the informal institution has been recorded as shifting over time with income level as people share knowledge within a society (Tang and Koveos, 2008). In the same spirit, in the PE industry, professional practice has been known to be

exported, first from the US, and further shaped by the local regulatory and cognitive institution (Manigart et al., 2002; Wright et al., 2005). An examination of how PEs react to changes and differences of institutions will greatly complement the understanding of my results and should be put on an agenda for further research.

Fifth, since the detection of norms relies on the observation of proxies such as age, social ties and analyst coverage of every single PE financing deal, the quality of manually made variables can be controlled only at the data-collection stage. Although my findings are generally consistent with previous studies, measurements such as institutional variables, especially the informal ones, can be challenged for their precision.

Though my study has its distinct focus, there is a need for further study on other determinants that may also impact PE financing efficiency. For example, previous studies show that institutional environment factors are helpful and worth further development. I recommend that a further index be developed and tested for this line of research. Such an index may include investor protection rights, financial market depth, and other matters. It would be beneficial to test shareholder rights using the LBO sample as the debt instrument applied in LBO fund-raising is mostly equity-like. Given that a proportion of debt securities in LBO financing is embedded with options, it would also be rewarding to use OAS from a larger, comprehensive dataset to explore further empirical examination of over- or under- pricing of option-embedded debt security. Another avenue for further study lies in the more precise measurement of financing cost. It would be interesting to know how much, in nominal dollars, the exact intermediary fee is in a financing deal if reliable data are available.

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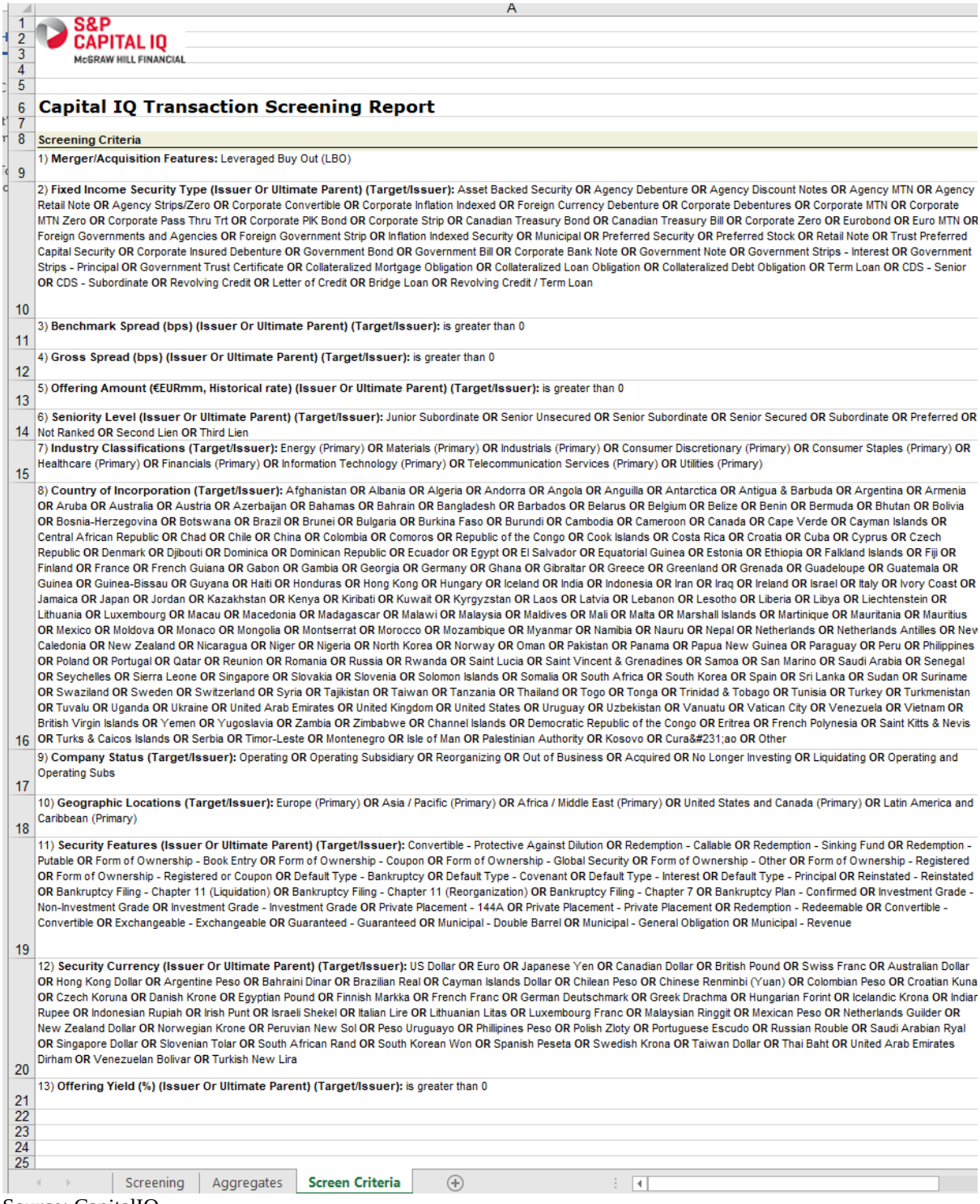
Appendix

Figure 1 Screen Criteria of Sample LBO Deals



S&P CAPITAL IQ
McGRAW HILL FINANCIAL

Capital IQ Transaction Screening Report

Screening Criteria

1) **Merger/Acquisition Features:** Leveraged Buy Out (LBO)

2) **Fixed Income Security Type (Issuer Or Ultimate Parent) (Target/Issuer):** Asset Backed Security **OR** Agency Debenture **OR** Agency Discount Notes **OR** Agency MTN **OR** Agency Retail Note **OR** Agency Strips/Zero **OR** Corporate Convertible **OR** Corporate Inflation Indexed **OR** Foreign Currency Debenture **OR** Corporate Debentures **OR** Corporate MTN **OR** Corporate MTN Zero **OR** Corporate Pass Thru Trt **OR** Corporate PIK Bond **OR** Corporate Strip **OR** Canadian Treasury Bond **OR** Canadian Treasury Bill **OR** Corporate Zero **OR** Eurobond **OR** Euro MTN **OR** Foreign Governments and Agencies **OR** Foreign Government Strip **OR** Inflation Indexed Security **OR** Municipal **OR** Preferred Security **OR** Preferred Stock **OR** Retail Note **OR** Trust Preferred Capital Security **OR** Corporate Insured Debenture **OR** Government Bond **OR** Government Bill **OR** Corporate Bank Note **OR** Government Note **OR** Government Strips - Interest **OR** Government Strips - Principal **OR** Government Trust Certificate **OR** Collateralized Mortgage Obligation **OR** Collateralized Loan Obligation **OR** Collateralized Debt Obligation **OR** Term Loan **OR** CDS - Senior **OR** CDS - Subordinate **OR** Revolving Credit **OR** Letter of Credit **OR** Bridge Loan **OR** Revolving Credit / Term Loan

3) **Benchmark Spread (bps) (Issuer Or Ultimate Parent) (Target/Issuer):** is greater than 0

4) **Gross Spread (bps) (Issuer Or Ultimate Parent) (Target/Issuer):** is greater than 0

5) **Offering Amount (€EURmm, Historical rate) (Issuer Or Ultimate Parent) (Target/Issuer):** is greater than 0

6) **Seniority Level (Issuer Or Ultimate Parent) (Target/Issuer):** Junior Subordinate **OR** Senior Unsecured **OR** Senior Subordinate **OR** Senior Secured **OR** Subordinate **OR** Preferred **OR** Not Ranked **OR** Second Lien **OR** Third Lien

7) **Industry Classifications (Target/Issuer):** Energy (Primary) **OR** Materials (Primary) **OR** Industrials (Primary) **OR** Consumer Discretionary (Primary) **OR** Consumer Staples (Primary) **OR** Healthcare (Primary) **OR** Financials (Primary) **OR** Information Technology (Primary) **OR** Telecommunication Services (Primary) **OR** Utilities (Primary)

8) **Country of Incorporation (Target/Issuer):** Afghanistan **OR** Albania **OR** Algeria **OR** Andorra **OR** Angola **OR** Anguilla **OR** Antarctica **OR** Antigua & Barbuda **OR** Argentina **OR** Armenia **OR** Aruba **OR** Australia **OR** Austria **OR** Azerbaijan **OR** Bahamas **OR** Bahrain **OR** Bangladesh **OR** Barbados **OR** Belarus **OR** Belgium **OR** Belize **OR** Benin **OR** Bermuda **OR** Bhutan **OR** Bolivia **OR** Bosnia-Herzegovina **OR** Botswana **OR** Brazil **OR** Brunei **OR** Bulgaria **OR** Burkina Faso **OR** Burundi **OR** Cambodia **OR** Cameroon **OR** Canada **OR** Cape Verde **OR** Cayman Islands **OR** Central African Republic **OR** Chad **OR** Chile **OR** China **OR** Colombia **OR** Comoros **OR** Republic of the Congo **OR** Cook Islands **OR** Costa Rica **OR** Croatia **OR** Cuba **OR** Cyprus **OR** Czech Republic **OR** Denmark **OR** Djibouti **OR** Dominica **OR** Dominican Republic **OR** Ecuador **OR** Egypt **OR** El Salvador **OR** Equatorial Guinea **OR** Estonia **OR** Ethiopia **OR** Falkland Islands **OR** Fiji **OR** Finland **OR** France **OR** French Guiana **OR** Gabon **OR** Gambia **OR** Georgia **OR** Germany **OR** Ghana **OR** Gibraltar **OR** Greece **OR** Greenland **OR** Grenada **OR** Guadeloupe **OR** Guatemala **OR** Guinea **OR** Guinea-Bissau **OR** Guyana **OR** Haiti **OR** Honduras **OR** Hong Kong **OR** Hungary **OR** Iceland **OR** India **OR** Indonesia **OR** Iran **OR** Iraq **OR** Ireland **OR** Israel **OR** Italy **OR** Ivory Coast **OR** Jamaica **OR** Japan **OR** Jordan **OR** Kazakhstan **OR** Kenya **OR** Kiribati **OR** Kuwait **OR** Kyrgyzstan **OR** Laos **OR** Latvia **OR** Lebanon **OR** Lesotho **OR** Liberia **OR** Libya **OR** Liechtenstein **OR** Lithuania **OR** Luxembourg **OR** Macau **OR** Macedonia **OR** Madagascar **OR** Malawi **OR** Malaysia **OR** Maldives **OR** Mali **OR** Malta **OR** Marshall Islands **OR** Martinique **OR** Mauritania **OR** Mauritius **OR** Mexico **OR** Moldova **OR** Monaco **OR** Mongolia **OR** Montserrat **OR** Morocco **OR** Mozambique **OR** Myanmar **OR** Namibia **OR** Nauru **OR** Nepal **OR** Netherlands **OR** Netherlands Antilles **OR** New Caledonia **OR** New Zealand **OR** Nicaragua **OR** Niger **OR** Nigeria **OR** North Korea **OR** Norway **OR** Oman **OR** Pakistan **OR** Panama **OR** Papua New Guinea **OR** Paraguay **OR** Peru **OR** Philippines **OR** Poland **OR** Portugal **OR** Qatar **OR** Reunion **OR** Romania **OR** Russia **OR** Rwanda **OR** Saint Lucia **OR** Saint Vincent & Grenadines **OR** Samoa **OR** San Marino **OR** Saudi Arabia **OR** Senegal **OR** Seychelles **OR** Sierra Leone **OR** Singapore **OR** Slovakia **OR** Slovenia **OR** Solomon Islands **OR** Somalia **OR** South Africa **OR** South Korea **OR** Spain **OR** Sri Lanka **OR** Sudan **OR** Suriname **OR** Swaziland **OR** Sweden **OR** Switzerland **OR** Syria **OR** Tajikistan **OR** Taiwan **OR** Tanzania **OR** Thailand **OR** Togo **OR** Tonga **OR** Trinidad & Tobago **OR** Tunisia **OR** Turkey **OR** Turkmenistan **OR** Tuvalu **OR** Uganda **OR** Ukraine **OR** United Arab Emirates **OR** United Kingdom **OR** United States **OR** Uruguay **OR** Uzbekistan **OR** Vanuatu **OR** Vatican City **OR** Venezuela **OR** Vietnam **OR** British Virgin Islands **OR** Yemen **OR** Yugoslavia **OR** Zambia **OR** Zimbabwe **OR** Channel Islands **OR** Democratic Republic of the Congo **OR** Eritrea **OR** French Polynesia **OR** Saint Kitts & Nevis **OR** Turks & Caicos Islands **OR** Serbia **OR** Timor-Leste **OR** Montenegro **OR** Isle of Man **OR** Palestinian Authority **OR** Kosovo **OR** Curaçao **OR** Other

9) **Company Status (Target/Issuer):** Operating **OR** Operating Subsidiary **OR** Reorganizing **OR** Out of Business **OR** Acquired **OR** No Longer Investing **OR** Liquidating **OR** Operating and Operating Subs

10) **Geographic Locations (Target/Issuer):** Europe (Primary) **OR** Asia / Pacific (Primary) **OR** Africa / Middle East (Primary) **OR** United States and Canada (Primary) **OR** Latin America and Caribbean (Primary)

11) **Security Features (Issuer Or Ultimate Parent) (Target/Issuer):** Convertible - Protective Against Dilution **OR** Redemption - Callable **OR** Redemption - Sinking Fund **OR** Redemption - Putable **OR** Form of Ownership - Book Entry **OR** Form of Ownership - Coupon **OR** Form of Ownership - Global Security **OR** Form of Ownership - Other **OR** Form of Ownership - Registered **OR** Form of Ownership - Registered or Coupon **OR** Default Type - Bankruptcy **OR** Default Type - Covenant **OR** Default Type - Interest **OR** Default Type - Principal **OR** Reinstated - Reinstated **OR** Bankruptcy Filing - Chapter 11 (Liquidation) **OR** Bankruptcy Filing - Chapter 11 (Reorganization) **OR** Bankruptcy Filing - Chapter 7 **OR** Bankruptcy Plan - Confirmed **OR** Investment Grade - Non-Investment Grade **OR** Investment Grade - Investment Grade **OR** Private Placement - 144A **OR** Private Placement - Private Placement **OR** Redemption - Redeemable **OR** Convertible - Convertible **OR** Exchangeable - Exchangeable **OR** Guaranteed - Guaranteed **OR** Municipal - Double Barrel **OR** Municipal - General Obligation **OR** Municipal - Revenue

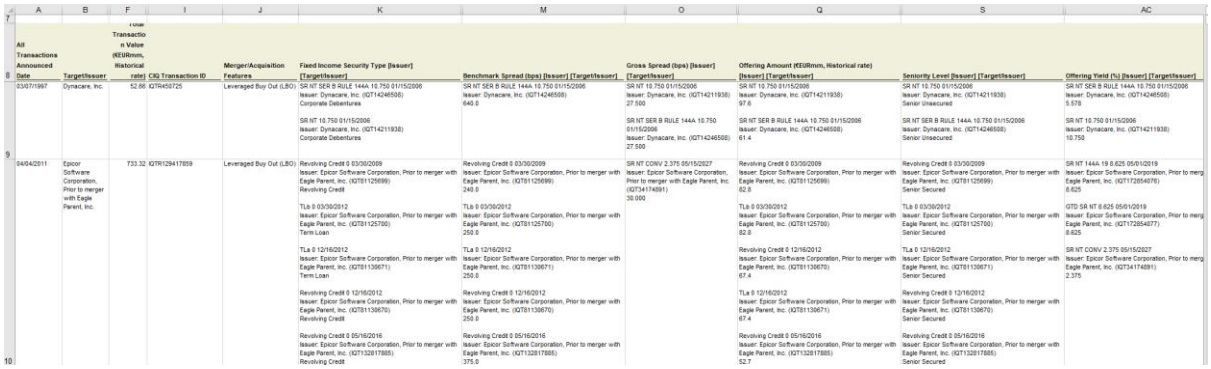
12) **Security Currency (Issuer Or Ultimate Parent) (Target/Issuer):** US Dollar **OR** Euro **OR** Japanese Yen **OR** Canadian Dollar **OR** British Pound **OR** Swiss Franc **OR** Australian Dollar **OR** Hong Kong Dollar **OR** Argentine Peso **OR** Bahraini Dinar **OR** Brazilian Real **OR** Cayman Islands Dollar **OR** Chilean Peso **OR** Chinese Renminbi (Yuan) **OR** Colombian Peso **OR** Croatian Kuna **OR** Czech Koruna **OR** Danish Krone **OR** Egyptian Pound **OR** Finnish Markka **OR** French Franc **OR** German Deutschmark **OR** Greek Drachma **OR** Hungarian Forint **OR** Icelandic Krona **OR** Indian Rupee **OR** Indonesian Rupiah **OR** Irish Punt **OR** Israeli Shekel **OR** Italian Lire **OR** Lithuanian Litas **OR** Luxembourg Franc **OR** Malaysian Ringgit **OR** Mexican Peso **OR** Netherlands Guilder **OR** New Zealand Dollar **OR** Norwegian Krone **OR** Peruvian New Sol **OR** Peso Uruguayo **OR** Phillipines Peso **OR** Polish Zloty **OR** Portuguese Escudo **OR** Russian Rouble **OR** Saudi Arabian Ryal **OR** Singapore Dollar **OR** Slovenian Tolar **OR** South African Rand **OR** South Korean Won **OR** Spanish Peseta **OR** Swedish Krona **OR** Taiwan Dollar **OR** Thai Baht **OR** United Arab Emirates Dirham **OR** Venezuelan Bolivar **OR** Turkish New Lira

13) **Offering Yield (%) (Issuer Or Ultimate Parent) (Target/Issuer):** is greater than 0

Screening | Aggregates | Screen Criteria

Source: CapitalIQ

Figure 2 Snapshot of Screening from CapitalIQ



All Transactions Announced Date	Target/Issuer	Total Transaction Value (KEURmm, Historical rate)	CIQ Transaction ID	Merger/Acquisition Features	Fixed Income Security Type [Issuer] [Target/Issuer]	Benchmark Spread (bps) [Issuer] [Target/Issuer]	Gross Spread (bps) [Issuer] [Target/Issuer]	Offering Amount (KEURmm, Historical rate) [Issuer] [Target/Issuer]	Seniority Level [Issuer] [Target/Issuer]	Offering Yield (%) [Issuer] [Target/Issuer]
03/07/1997	Dynacare, Inc.	52.66	IQTR450725	Leveraged Buy Out (LBO)	SR NT SER B RULE 144A 10.750 01/15/2006 Issuer: Dynacare, Inc. (IQT14246506) Corporate Debentures SR NT 10.750 01/15/2006 Issuer: Dynacare, Inc. (IQT14211938) Corporate Debentures	SR NT SER B RULE 144A 10.750 01/15/2006 Issuer: Dynacare, Inc. (IQT14246508) 640.0	SR NT 10.750 01/15/2006 Issuer: Dynacare, Inc. (IQT14211938) 27.500 SR NT SER B RULE 144A 10.750 01/15/2006 Issuer: Dynacare, Inc. (IQT14246508) 27.500	SR NT 10.750 01/15/2006 Issuer: Dynacare, Inc. (IQT14211938) 97.6 SR NT SER B RULE 144A 10.750 01/15/2006 Issuer: Dynacare, Inc. (IQT14246508) 61.4	SR NT 10.750 01/15/2006 Issuer: Dynacare, Inc. (IQT14211938) Senior Unsecured SR NT SER B RULE 144A 10.750 01/15/2006 Issuer: Dynacare, Inc. (IQT14246508) Senior Unsecured	SR NT SER B RULE 144A 10.750 01/15/2006 Issuer: Dynacare, Inc. (IQT14246508) 5.578 SR NT 10.750 01/15/2006 Issuer: Dynacare, Inc. (IQT14211938) 10.750
04/04/2011	Epicor Software Corporation, Prior to merger with Eagle Parent, Inc.	733.32	IQTR12941859	Leveraged Buy Out (LBO)	Revolving Credit 0 03/30/2009 Issuer: Epicor Software Corporation, Prior to merger with Eagle Parent, Inc. (IQT81125699) Revolving Credit TLb 0 03/30/2012 Issuer: Epicor Software Corporation, Prior to merger with Eagle Parent, Inc. (IQT81125700) Term Loan TLa 0 12/16/2012 Issuer: Epicor Software Corporation, Prior to merger with Eagle Parent, Inc. (IQT81130671) Term Loan Revolving Credit 0 12/16/2012 Issuer: Epicor Software Corporation, Prior to merger with Eagle Parent, Inc. (IQT81130670) Revolving Credit Revolving Credit 0 05/16/2016 Issuer: Epicor Software Corporation, Prior to merger with Eagle Parent, Inc. (IQT132817885) Revolving Credit	Revolving Credit 0 03/30/2009 Issuer: Epicor Software Corporation, Prior to merger with Eagle Parent, Inc. (IQT81125699) 240.0 TLb 0 03/30/2012 Issuer: Epicor Software Corporation, Prior to merger with Eagle Parent, Inc. (IQT81125700) 250.0 TLa 0 12/16/2012 Issuer: Epicor Software Corporation, Prior to merger with Eagle Parent, Inc. (IQT81130671) 250.0 Revolving Credit 0 12/16/2012 Issuer: Epicor Software Corporation, Prior to merger with Eagle Parent, Inc. (IQT81130670) 250.0 Revolving Credit 0 05/16/2016 Issuer: Epicor Software Corporation, Prior to merger with Eagle Parent, Inc. (IQT132817885) 375.0	SR NT CONV 2.375 05/15/2027 Issuer: Epicor Software Corporation, Prior to merger with Eagle Parent, Inc. (IQT34174891) 30.000	Revolving Credit 0 03/30/2009 Issuer: Epicor Software Corporation, Prior to merger with Eagle Parent, Inc. (IQT81125699) 82.8 TLb 0 03/30/2012 Issuer: Epicor Software Corporation, Prior to merger with Eagle Parent, Inc. (IQT81125700) 82.8 Revolving Credit 0 12/16/2012 Issuer: Epicor Software Corporation, Prior to merger with Eagle Parent, Inc. (IQT81130670) 67.4 TLa 0 12/16/2012 Issuer: Epicor Software Corporation, Prior to merger with Eagle Parent, Inc. (IQT81130671) 67.4 Revolving Credit 0 05/16/2016 Issuer: Epicor Software Corporation, Prior to merger with Eagle Parent, Inc. (IQT132817885) 52.7	Revolving Credit 0 03/30/2009 Issuer: Epicor Software Corporation, Prior to merger with Eagle Parent, Inc. (IQT81125699) Senior Secured TLb 0 03/30/2012 Issuer: Epicor Software Corporation, Prior to merger with Eagle Parent, Inc. (IQT81125700) Senior Secured TLa 0 12/16/2012 Issuer: Epicor Software Corporation, Prior to merger with Eagle Parent, Inc. (IQT81130671) Senior Secured Revolving Credit 0 12/16/2012 Issuer: Epicor Software Corporation, Prior to merger with Eagle Parent, Inc. (IQT81130670) Senior Secured Revolving Credit 0 05/16/2016 Issuer: Epicor Software Corporation, Prior to merger with Eagle Parent, Inc. (IQT132817885) Senior Secured	SR NT 144A 19 8.625 05/01/2019 Issuer: Epicor Software Corporation, Prior to merg Eagle Parent, Inc. (IQT172854076) 8.625 GTD SR NT 8.625 05/01/2019 Issuer: Epicor Software Corporation, Prior to merg Eagle Parent, Inc. (IQT172854077) 8.625 SR NT CONV 2.375 05/15/2027 Issuer: Epicor Software Corporation, Prior to merg Eagle Parent, Inc. (IQT34174891) 2.375

Source: CapitalIQ